Mohamed bin Zayed University of Artificial Intelligence

ABU DHABI AI-ROBOTICS CONFERENCE

DIALOGUE ON HEALTHCARE

APRIL 23 – 25, 2025

Multi Use Hall, MBZUAI Campus,
Masdar City, Abu Dhabi

CONTENTS

About AD-AIRoC2025

Robotics Department of MBZUAI welcomes you to AIRoC:

As robotics and artificial intelligence become integrated into our daily lives, the need to understand their capabilities and potential become greater. We are proud to welcome you to the inaugural AI and Robotics Conference, hosted at our campus in Abu Dhabi. This first edition of the conference will focus on healthcare: an emergent theme in both AI and robotics.

Robotics was translationally introduced to therapeutic medicine in recent decades and made the innovation in minimally invasive surgery, tele-medicine, and active rehabilitation, as well as in improving the quality-of-life of the people of determination. The recent advance of AI such as Large-Language-Model, Vison-Language- Model, Reinforcement-Learning, Machine-Learning, Computer- Vision as well as Brain-Machine-Interface will take the relationship between robotics and medicine to the next horizon. AIRoC2025 aims to deepen the conversation, inspire new ideas, and trigger collaborations between experts, students, policymakers and industry leaders, and the public.

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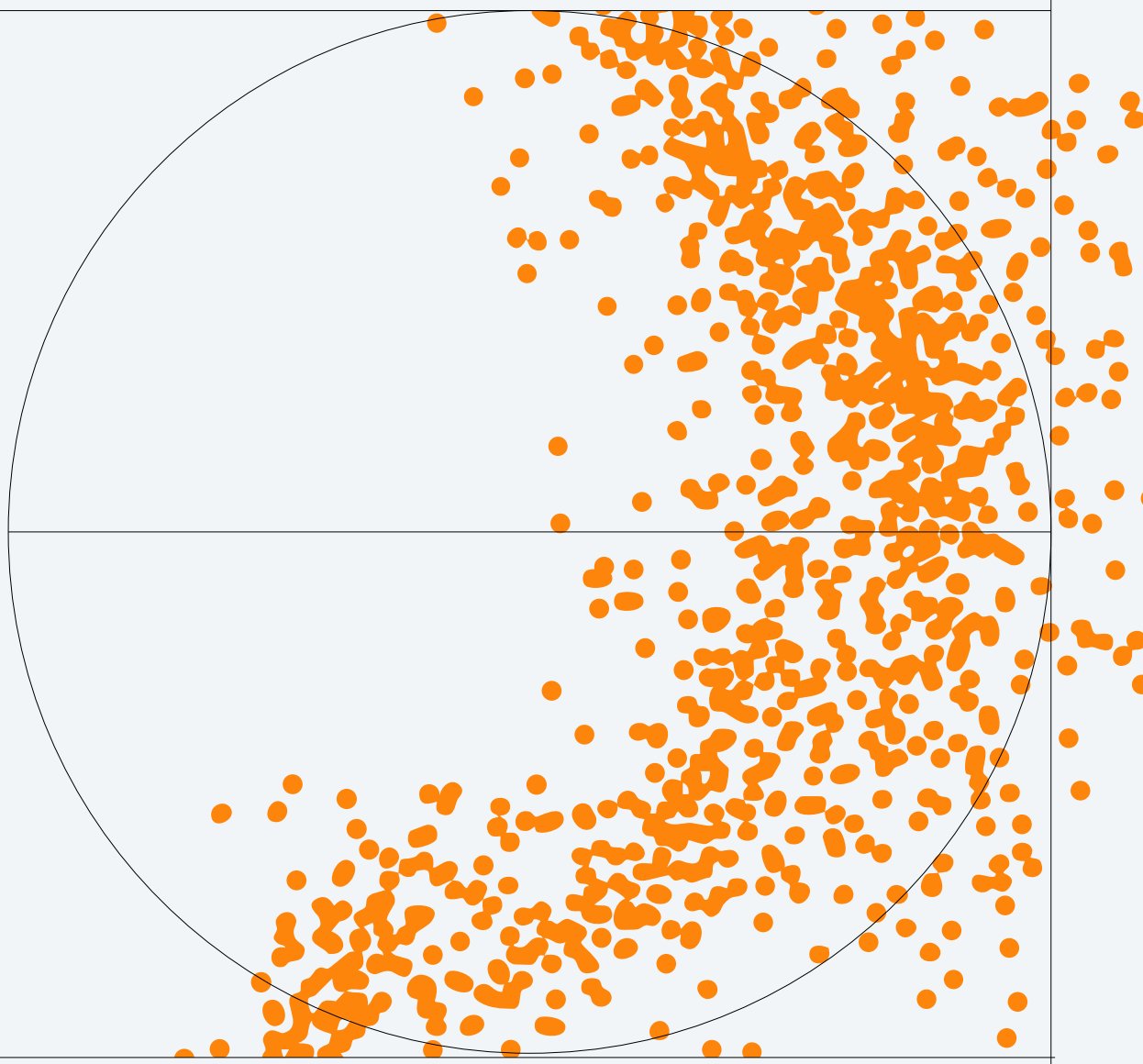


PROGRAM

23 April 2025

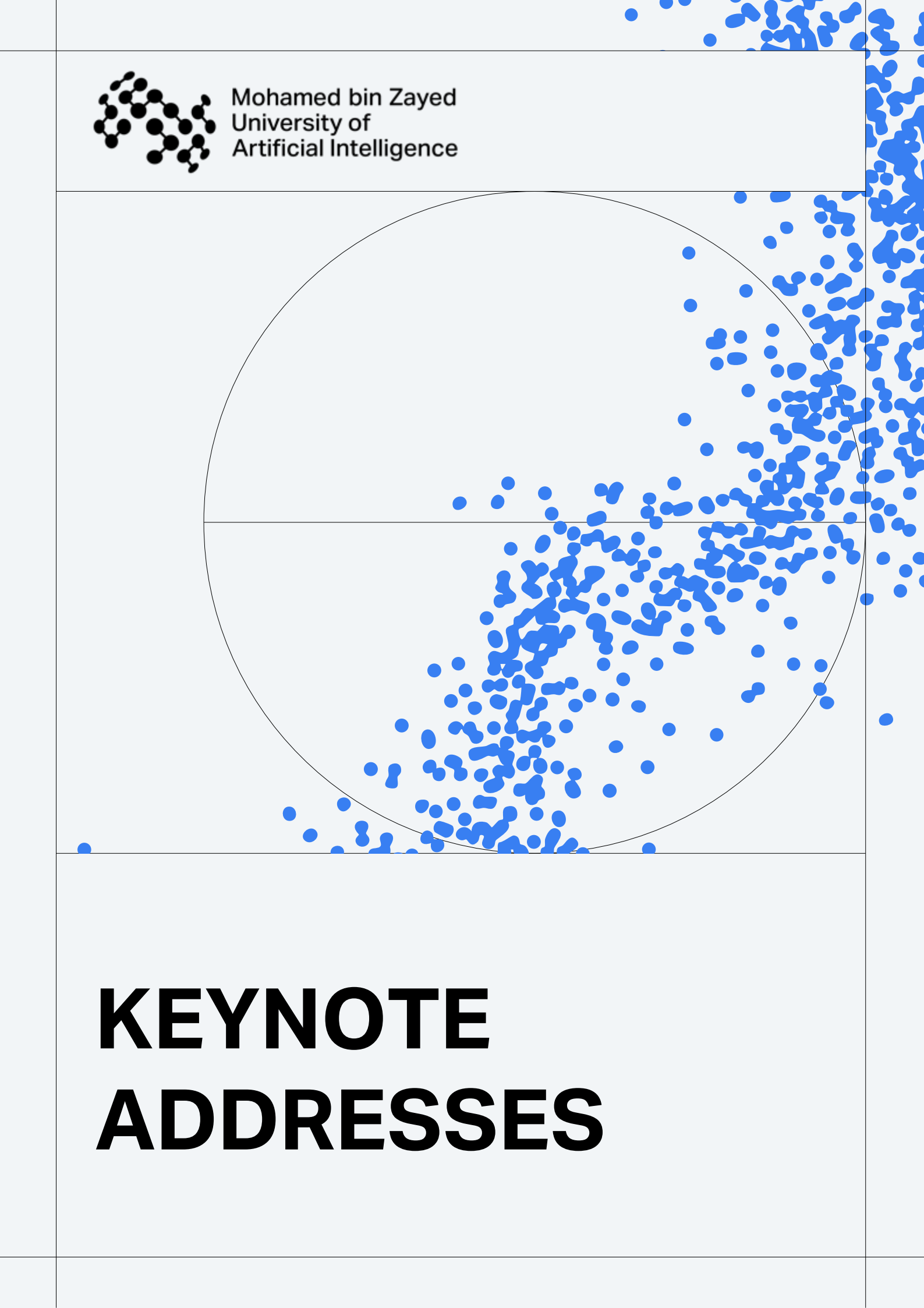
Time	Details
08:30 AM - 09:00 AM	**Registration -** Guest Arrival and Registration
09:00 AM - 09:10 AM	**Welcome - Abdalla Swikir,** MBZUAI
09:10 AM - 09:40 AM	**Keynote Address 1 - H.E. Abdulla Abdulalee Abdulla AlHumaidan** "**Empowering Inclusion through Artificial Intelligence:** The Transformative Role of Zayed Higher Organization for People of Determination (ZHO)"
09:40 AM - 10:10 AM	**Keynote Address 2 - Tim Baldwin**, MBZUAI **"MBZUAI Public Health Program"**
10:10 AM - 10:40 AM	**Invited Talk 1.1 - Eran Segal,** MBZUAI **"Personalized medicine based on deep human phenotyping"**
10:40 AM - 11:00 AM	**Morning Tea/ Coffee Break**
11:00 AM - 11:30 AM	**Invited Talk 1.2 - Yoshi Nakamura,** MBZUAI **"Human Digital Twin and Humanoid Robotics"**
11:30 AM - 12:00 PM	**Invited Talk 1.3 - Olivier Oullier,** Aix-Marseille University **"AI-Driven Multimodal Interfaces for Improved Human - Robot Coordination Dynamics"**
12:00 PM - 01:00 PM	**Networking Lunch** Buffet Lunch
01:00 PM - 01:45 PM	**Keynote Address 3 - Sami Haddadin,** MBZUAI "**Human-Robot Symbiosis:** From Human Modeling to Neurally - Driven Symbiotic Embodiment"
01:45 PM - 02:45 PM	**Dialogue 1.1 - Mind, Body and Communication** Moderator: **Elizabeth Churchill,** MBZUAI Dialogists: **Olivier Oullier** **Jun Morimoto** **Imene Tarakli** **Hanan Salam** **Tetsunari Inamura**
02:45 PM - 03:15 PM	**Invited Talk 1.4 - Jun Morimoto,** Kyoto University **"Machine learning approaches for assistive robot control"**
03:15 PM - 03:45 PM	**Afternoon Tea/ Coffee Break**
03:45 PM - 04:15 PM	**Invited Talk 1.5 - Imene Tarakli,** Sheffield Hallam University "**Interactive Reinforcement Learning for Teachable Social Robots:** A Peer-Based Framework for Inclusive Education and Cognitive Support"
04:15 PM – 04:45 PM	**Invited Talk 1.6 - Hanan Salam,** NYU Abu Dhabi "**Adaptive Social Robots for Personalized Productivity Coaching for College Students with ADHD:** A New Vision for AI in Healthcare"
04:45 PM - 05:15 PM	**Invited Talk 1.7 - Tetsunari Inamura,** Tamagawa University **"AI and Robotics for Mental - Coaching Based on Self-Efficacy"**
05:15 PM Onwards	**Welcome Reception**

24 April 2025

Time	Details
08:30 AM - 09:00 AM	**Registration -** Guest Arrival and Registration
09:00 AM - 10:00 AM	**Dialogue 2.1 - Intervention** Moderator: **Olivier Oullier,** Aix-Marseille University Dialogists: **Waseem Aziz** **Cesare Stefanini** **Mohammad Modassir Firdaus**
10:00 AM - 10:30 AM	**Invited Talk 2.1 - Mohammad Modassir Firdaus,** IIT Gandhinagar "**Advancing Minimally Invasive Surgery:** A Cadaverically Validated Tendon - Driven Continuum Laparoscope for Colon and Abdominal Navigation"
10:30 AM - 11:00 AM	**Morning Tea/ Coffee Break**
11:00 AM - 11:30 AM	**Invited Talk 2.2 - Waseem Aziz,** SSMC "**Robotic Cerebrovascular and Bypass Surgery:** A Future of Enhanced Quality and Precision in Microsurgery"
11:30 AM - 12:00 PM	**Invited Talk 2.3 - Cesare Stefanini,** Scuola Superiore Sant'Anna "**Biorobotics for Medicine:** AI Unlocking New Opportunities"
12:00 PM - 01:00 PM	**Networking Lunch** Buffet Lunch
01:00 PM - 01:45 PM	**Keynote Address 4 - Hassa Saif Al Mazrouei,** SSMC "**Artificial Intelligence in Medicine:** Current Trends and Future Directions"
01:45 PM - 02:45 PM	**Dialogue 2.2 - Medicine and AI** Moderator: **Cesare Stefanini** Dialogists: **Hassa Saif Al Mazrouei** **Anqing Duan** **Cristina Piazza** **Ke Wu**
02:45 PM - 03:15 PM	**Afternoon Tea/Coffee Break**
03:15 PM - 03:45 PM	**Invited Talk 2.4 - Anqing Duan,** MBZUAI **"Skincare Services Empowered by Robotics and AI"**
03:45 PM - 04:15 PM	**Invited Talk 2.5 - Cristina Piazza,** Technical University of Munich **"Toward Bioinspired Bionic Limbs"**
04:15 PM - 04:45 PM	**Invited Talk 2.7 – Ke Wu,** MBZUAI "**Enabling Safe and Natural Physical Interaction:** Deformable Robotic Systems in Healthcare"
04:45 PM	**End of the Day**

25 April 2025

Time	Details
08:30 AM - 09:00 AM	**Registration -** Guest Arrival and Registration
09:00 AM - 09:45 AM	**Dialogue 3.1 - Rehabilitation** Moderator: **Dezhen Song,** MBZUAI Dialogists: **Sunil Agrawal** **Hideki Kadone** **Ali Khaalilian Motamed Bonab**
109:45 AM - 10:15 AM	**Invited Talk 3.1 - Sunil Agrawal,** Columbia University "**Rehabilitation Robotics:** Improving Everyday Human Functions"
10:15 AM - 10:45 AM	**Morning Tea/ Coffee Break**
10:45 AM - 11:15 AM	**Invited Talk 3.2 - Hideki Kadone,** Tsukuba University **"Innovative Medicine and Engineering Through Robotics and AI in Assistive Technologies - HAL, Qolo, and Motion Support Systems"**
11:15 AM - 11:45 AM	**Invited Talk 3.3 - Ali Khalilian Motamed Bonad,** Scuola Superiore Sant'Anna "**Hybrid Elbow Exosuits for Upper Limb Rehabilitation:** A Soft Therapeutic Approach"
11:45 AM - 12:00 PM	**Closing - Dezhen Song**
12:00 PM - 02:30 PM	**Lab Visits/ Lunch –** **Data Observatory** **Robotics Teaching Lab** **Robotics Department**
02:30 PM	**End of the Conference**



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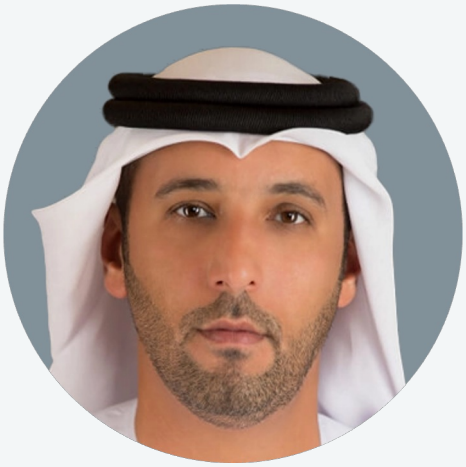
KEYNOTE ADDRESSES



H.E. Abdulla Abdulalee Abdulla AlHumaidan

Secretary-General Zayed Higher Organization for People of Determination UAE

Empowering inclusion through artificial intelligence:

The Transformative Role of Zayed Higher Organization for People of Determination (ZHO)

Abstract

H.E. Abdulla Abdulalee AlHumaidan is a leading advocate for inclusivity and empowerment in the UAE. As Secretary-General of the Zayed Higher Organization for People of Determination since 2017, he has championed accessibility and social progress. With a background in management and a Master's in Business Administration, he brings both expertise and passion to his work. He also serves as Deputy Vice-President of MENA at Rehabilitation International. His visionary leadership continues to drive positive change for individuals with determination. His Excellency's leadership is driving transformative change, positioning the UAE as a global leader in inclusive innovation and demonstrating how technology can be harnessed to build a more equitable future for all.

Timothy Baldwin

Provost and Professor of Natural Language Processing MBZUAI, UAE

Mbzuai Public Health Program

Bio

Professor Baldwin's primary research focus is on natural language processing (NLP), including deep earning, algorithmic fairness, computational social science, and social media analytics. Tim Baldwin is Provost and Professor of Natural Language Processing at Mohamed bin Zayed University of Artificial Intelligence, in addition to being a Melbourne Laureate Professor in the School of Computing and Information Systems, The University of Melbourne, and Chief Scientist of Libr AI, a start-up focused on AI safety.

Professor Baldwin is the author of around 500 peer-reviewed publications across diverse topics in natural language processing and AI, with over 25,000 citations, in addition to being the recipient of a number of prestigious awards at top NLP conferences. He is also a co-developer of widely used LLMs for languages including Arabic, English, and Indonesian, with over 1m downloads on Hugging face. He has been featured in media outlets including MIT Tech Review, Bloomberg, Reuters, The Economist, CNN, Financial Times, IEEE Spectrum, The Times, and ABC News, and his research has been funded by organizations including the National Science Foundation, Australian Research Council, Google, Microsoft, Xerox, ByteDance, NTT, and Fujitsu.

Sami Haddadin

Vice President of Research and
Professor of Robotics MBZUAI, UAE

Human-Robot Symbiosis:

From Human Modeling to Neurally-Driven Symbiotic Embodiment.

Abstract

In developing transformative neuro engineering technologies for restoring autonomy and mobility to those with physical disabilities, a shift towards a more compatible, safe, and anticipatory human-centered approach is essential. This necessitates the integration of advanced AI and machine learning algorithms capable of leveraging high throughput sensory data (including kinematics, eye-tracking, invasive and non-invasive brain data) and human neuro mechanics models (human digital twins). Rather than expecting humans to conform to and learn how to operate robotic systems, including prosthetics, robot neuro assistants, or brain-controlled humanoids, the focus is on designing systems that recognize human intent and emulate natural limb and whole-body behavior. This entails embedding models of human movement and interaction into robot learning and control algorithms, maximizing therapeutic effects and patient benefit as well as achievable autonomy. The core of this approach is the development of human digital twins driven by multi-modal sensory data, encompassing neuro mechanics modeling, muscle dynamics, and control mechanisms. By learning from human physiology, robot systems can exhibit anthropomorphic traits and reflexes, achieving advanced capabilities while retaining humanlike responses.

This includes decoding full state joint, impedance, and force policies and integrating human digital twins to enhance user embodiment. In summary, this new generation of transformative technologies paves the way for a new era of human-model-informed, symbiotic embodiments, enhancing the integration and effectiveness of AI-empowered robotic systems in various domains, particularly in healthcare and rehabilitation.

Bio

Sami Haddadin is Vice President for Research and Professor of Robotics at the Mohamed bin Zayed University of Artificial Intelligence. He has published more than 200 scientific articles and is recognized for his contributions to robotics and AI. Haddadin received his doctorate summa cum laude from RWTH Aachen University in 2011 and subsequently worked as a research assistant at the German Aerospace Center (DLR). From April 2014 to April 2018, he held the Chair of Automatic Control at the Gottfried Wilhelm Leibniz University Hannover, and from 2018 until January 2025, he was a professor and Chair of Robotics and Systems Intelligence at the Technical University of Munich (TUM). During this time he was also the founding and executive director of the Munich Institute of Robotics and Machine Intelligence (TUM MIRMI). Haddadin has been involved in various initiatives and commissions, such as the Robot Factory training program in Hanover and the Study Commission on Artificial Intelligence in the German Parliament. He has served on the EU High-Level Industrial Roundtable, Industry 2030, and the EU High-Level Expert Group on Artificial Intelligence. In 2020, he was appointed Chairman of the Bavarian AI Council. Haddadin has received several prestigious awards, including the Gottfried Wilhelm Leibniz Prize in 2019 and the Alfried Krupp Sponsorship Award for Young University Teachers in 2015. In 2017, he and his colleagues Simon Haddadin and Sven Parusel were awarded the German Future Prize for their work on affordable, flexible, and user-friendly robots. In 2021, Haddadin was elected a member of the German National Academy of Sciences Leopoldina.

Hassa Al Mazrouei

Medical Director Executive & International Patient Services, Physician Obstetrics and Gynecology, Sheikh Shakhbout Medical City - SSMC, UAE

Artificial Intelligence in Medicine:

Current Trends and Future Directions

Bio

Dr. Hassa Al Mazrouei serves as the Medical Director of Executive and International Patient Services and Patient Experience at Sheikh Shakhbout Medical City (SSMC), one of the United Arab Emirates' foremost tertiary academic hospitals. With over 15 years of clinical and leadership experience, Dr. Al Mazrouei is widely recognized for her contributions to advancing patient- centered care, operational excellence, and medical education. Her work is centered on enhancing the patient journey, optimizing clinical efficiency, and leading strategic service improvements across complex healthcare pathways. In 2025, she established and now leads SSMC's Rare Disease Program-an institutional initiative focused on improving access, coordination, and outcomes for patients with complex and underserved conditions.

Dr. Al Mazrouei is also a prominent advocate for digital transformation in healthcare. She completed the distinguished International Executive Program in Artificial Intelligence at the Mohamed bin Zayed University of Artificial Intelligence (MBZUAI), equipping her with the expertise to lead AI integration initiatives within clinical operations. Her approach combines deep clinical insight with a forward-looking vision to harness technology in elevating healthcare delivery.

A respected thought leader and international speaker, Dr. Al Mazrouei chairs the Scientific Committee of the International Patient Experience Symposium. Through this platform and beyond, she continues to shape the global discourse on experience-driven, data-informed, and innovation-led healthcare.

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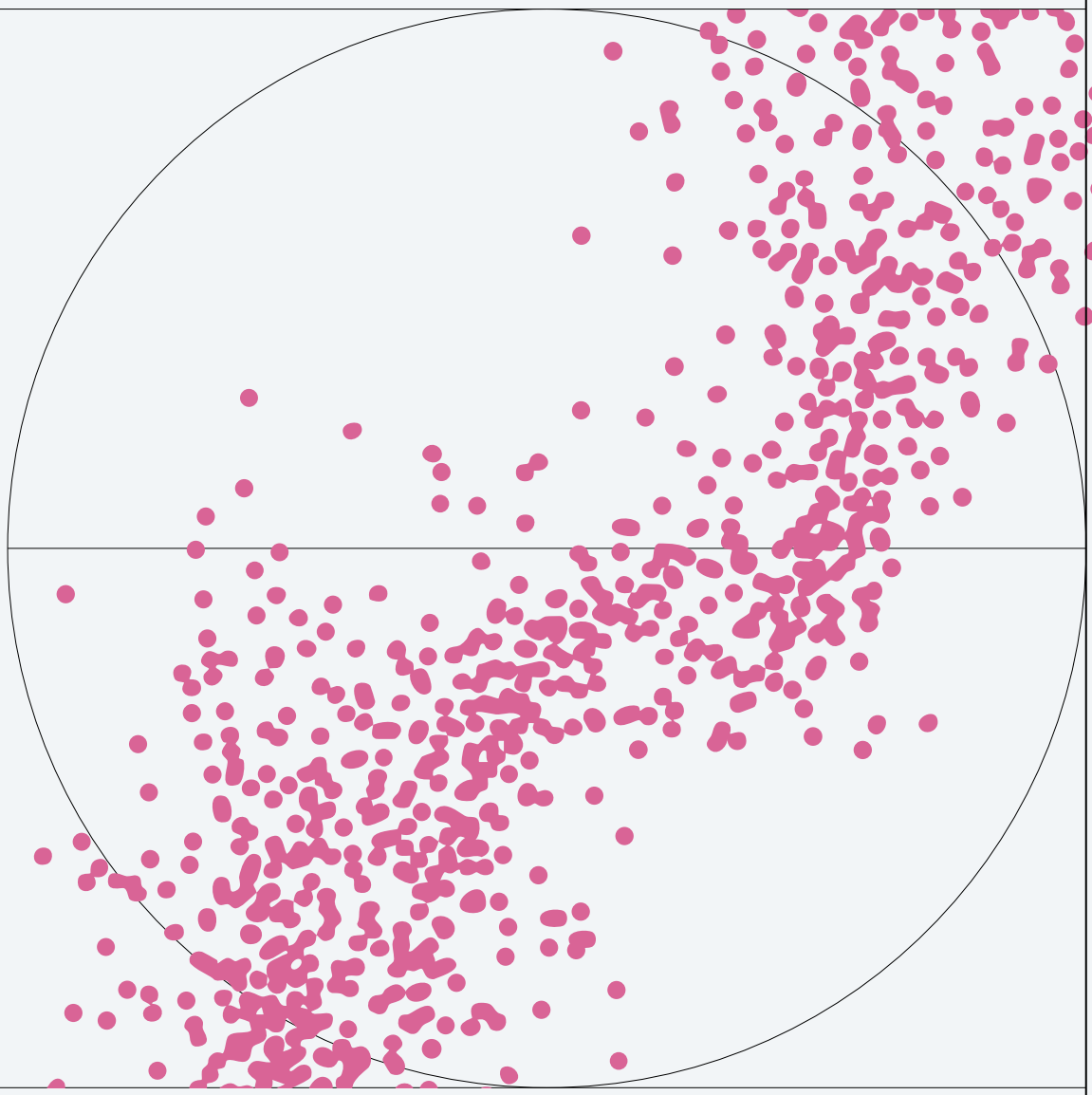
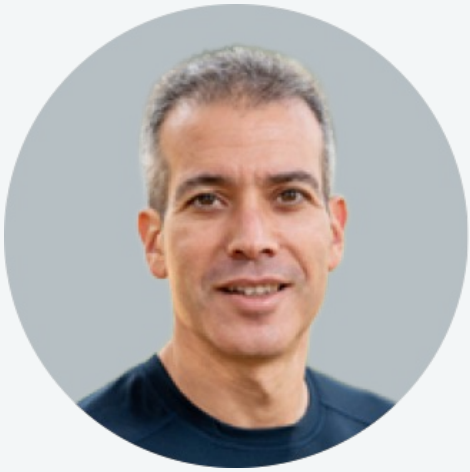


INVITED TALKS



Eran Segal

Adjunct Professor and Chair of Computational Biology Department MBZUAI, UAE

Personalized Medicine Based on Deep Human Phenotyping

Abstract

Recent technological advances allow large cohorts of human individuals to be profiled, presenting many challenges and opportunities. I will present The Human Phenotype Project, a large-scale (>25,000 participants) deep- phenotype prospective longitudinal cohort and biobank that we established, aimed at identifying novel molecular markers with diagnostic, prognostic and therapeutic value, and at developing prediction models for disease onset and progression. Our deep profiling includes medical history, lifestyle and nutritional habits, vital signs, anthropometrics, blood tests, continuous glucose and sleep monitoring, and molecular profiling of the transcriptome, genetics, gut and oral microbiome, metabolome and immune system. Our analyses of this data provide novel insights into potential drivers of obesity, diabetes, and heart disease, and identify hundreds of novel markers at the microbiome, metabolite, and immune system level. Foundation AI models that we developed provide novel representations of the diverse modalities that we measured on the cohort and achieve state-of-the-art performance in predicting future onset of disease and trajectories of disease risk factors. Overall, our predictive models can be translated into personalized disease prevention and treatment plans, and to the development of new therapeutic modalities based on metabolites and the microbiome.

Bio

Prior to joining MBZUAI, Professor Segal published over 200 peer-reviewed publications, which have been cited over 60,000 times. He received several awards and honors for his work, including the Overton prize, awarded annually by the International Society for Bioinformatics (ICSB) to one scientist for outstanding accomplishments in computational biology, and the Michael Bruno award. Professor Segal heads the Human Phenotype Project, a large-scale (more than 10,000 participants) deep-phenotype prospective longitudinal cohort and biobank that his lab established, aimed at identifying novel molecular markers with diagnostic, prognostic and therapeutic value, and at developing prediction models for disease onset and progression. The deep profiling includes medical history, lifestyle and nutritional habits, vital signs, anthropometrics, blood tests, continuous glucose and sleep monitoring, and molecular profiling of the transcriptome, genetics, gut and oral microbiome, metabolome and immune system.

Professor Segal's analysis of this data provides novel insights into potential drivers of obesity, diabetes, and heart disease, and identifies hundreds of novel markers at the microbiome, metabolite, and immune system level. The predictive models developed can be translated into personalized disease prevention and treatment plans, and to the development of new therapeutic modalities based on metabolites and the microbiome.

Professor Segal's research focuses on developing and fine-tuning robust foundation models via Self-supervised Learning (SSL) techniques based on the data of the Human Phenotype Project. The models draw inspiration from large language models (LLMs) like OpenAI's GPT-series models, but extend them by handling diverse clinical and multi-omics data modalities, including imaging, time-series, tabular, and sequencing-based data. While LLMs can understand and generate human-like text, here the focus is on creating multi-modal models that can effectively analyze heterogeneous types of medical data and be tailored to the biomedical domain.

The multi-modal models developed excel at extracting meaningful features and patterns from each data modality while capturing the complex interplay between different modalities. For example, when analyzing a patient's health status, our models can simultaneously consider their genetic information, imaging data, time-series data from wearables, and tabular data like blood tests. By learning the relationships between these modalities, the models can generate holistic insights into an individual's health, predict disease risks, stratify patients, and identify optimal treatment strategies. By combining different data modalities, the research can unlock new avenues for predictive modeling, disease diagnosis, and personalized medicine. This multi-modal approach has the potential to revolutionize healthcare by harnessing the power of AI to analyze and interpret complex medical data across different modalities.

Professor Segal's lab includes a multi-disciplinary team of computational biologists and experimental scientists in the area of computational and systems biology. The group has extensive experience in machine learning, computational biology, and analysis of heterogeneous high-throughput genomic data.

He was elected as an EMBO member and as a member of the young Israeli academy of science. During the COVID-19 pandemic, Professor Segal developed models for analyzing the dynamics of the pandemic and served as a senior advisor to the government of Israel.

Professor Segal was awarded a B.Sc. in Computer Science summa cum laude from Tel-Aviv University, and a Ph.D. in Computer Science and Genetics, from Stanford University. Before joining the Weizmann Institute, Professor Segal held an independent research position at Rockefeller University, New York.

Yoshi Nakamura

Professor and Chair of Robotics Department MBZUAI, UAE

Human Digital Twin and Humanoid Robotics

Abstract

A humanoid robot is the ultimate form solution of robots by definition. The mechanical realization is still undergoing though we see many promising prototypes and developments. The computational side of humanoid robots is no less challenging than the mechanical side. It does not only mean sensing and control. It includes the essential computational problems regarding humans since a humanoid robot would find its distinctive applications in the relationship with humans. A humanoid robot needs to understand the implication of human movements, the sensation of human body, the relationship with the objects and the environments, and the human-human relationship, which are computationally implemented in the robot. A focus of humanoid robotics is on the modeling of personality of the humans, namely, making the human digital twin. Computer vision with AI provides means to capture the data of a person. Computational robotics offers in-depth analysis of human movements including biomechanical information. This talk introduces the recent developments in the fields.

Bio

Yoshihiko Nakamura is Professor and Chair of Robotics Department, Mohamed bin Zayed University of Artificial Intelligence, Abu Dhabi, UAE. He is CEO of Kinescopic, Inc. He received Ph.D. degree in mechanical engineering from Kyoto University. He held faculty positions at Kyoto University, University of California Santa Barbara and University of Tokyo before joining MBZUAI in 2024. He is Professor Emeritus of University of Tokyo. Prof. Nakamura's fields of research are humanoid robotics, biomechanics, human digital twin and their computational algorithms. He received King- Sun Fu Memorial Best Transactions Paper Award, IEEE Transaction of Robotics and Automation in 2001 and 2002. He is also a recipient of JSME Medal for Distinguished Engineers in 2019, Pioneer Award of IEEE Robotics and Automation Society in 2021 and Tateisi Prize Achievement Award in 2022. He is Foreign Member of Academy of Engineering Science of Serbia, TUM Distinguished Affiliated Professor of Technische Universität München, Life Fellow of IEEE and Fellow of Japan Society of Mechanical Engineers, Robotics Society of Japan and World Academy of Art and Science.

Olivier Oullier

Professor Behavioral and Brain Sciences
Aix- Marseille University France

AI-Driven Multimodal Interfaces for Improved Human-Robot Coordination Dynamics

Abstract

Multimodal AI systems, trained on diverse neurophysiological signals such as brainwaves, eye movements, facial expressions, heartbeats, and vocal prosody, can significantly enhance human-robot collaboration. By enabling machines to monitor users' physicality, behavior, and cognitive dynamics in real time, these systems form the foundation of advanced human- machine interfaces (HMIs) that allow robots to dynamically adapt to the ever-changing actions and mental states of their users. Originally developed to support individuals with sensorimotor impairments, these multimodal HMIs are now transforming human-machine social coordination dynamics in critical environments. A standout application is surgical robotics, where HMIs track surgeons' movements, attention, cognitive load, and stress levels during operations, enabling robots to assist more effectively-minimizing risks, improving patient outcomes, and safeguarding surgeons' physical and mental health. By seamlessly integrating human expertise with robotic precision, this technology is redefining cooperative workflows in healthcare and beyond.

Bio

Olivier Oullier is a Professor of Behavioral and Brain Sciences at Aix-Marseille University. He is the co- founder and CEO of Inclusive Brains, which develops multimodal AI systems enabling machines to adapt to their users and serves as Chief AI Scientist at Biotech Dental Group, where he also leads the AI Institute. Previously, he was President of EMOTIV, a California-based global leader in portable brain-sensing technology. He has also been a Member of the Executive Committee and Global Head of Strategy in Health & Healthcare at the World Economic Forum, which named him a Young Global Leader. Additionally, he served as Scientific Adviser to the French Prime Minister, heading the Neuroscience and Public Policy Program.

Jun Morimoto

Professor School of Informatics
Kyoto University, Japan

Machine Learning Approaches for Assistive Robot Control

Abstract

As exoskeletons are promising tools for rehabilitation therapy, a wide variety of their designs have been explored. However, despite this technological progress, exoskeletons have yet to see widespread adoption in clinical settings. This is partly attributable to the conventional robot design approach, which endeavors to furnish a universal solution to all the problems. This approach is ill-suited to therapy assistance, as the clinical requirements are too diverse to be encompassed by a multi-functioning robot. To bridge this gap, we present the development of a Modular Exoskeletal Joint (MEJ), a foundational component that enables the agile creation of specialized, single-function exoskeleton systems optimized for specific therapeutic applications. This modular approach not only accelerates development but also improves clinical adaptability and user-focused design. In this presentation, we will also share our recent findings on applying machine learning algorithms to exoskeleton control, with the aim of adapting the system to the unique needs and movement patterns of each individual user. Additionally, we will briefly introduce our studies about applications of brain-machine interface to control the exoskeleton robots.

Bio

Jun Morimoto is a professor at the Graduate School of Informatics, Kyoto University. He received his Ph.D. in information science from Nara Institute of Science and Technology (NAIST), Nara, Japan, in 2001. From 2001 to 2002, he was a postdoctoral fellow at the Robotics Institute, Carnegie Mellon University, Pittsburgh, PA, USA. He Jointed ATR in 2002. From 2019 to 2021, he was a team leader of the Man-Machine Collaboration Research Team, Robotics Project, RIKEN. He is also currently the Head of the Brain-Robot Interface Department at ATR Computational Neuroscience Laboratories.

Imene Tarakli

PhD Candidate Department of Computing
Sheffield Hallam University UK

Interactive Reinforcement Learning for Teachable Social Robots:

A Peer-Based Framework for Inclusive Education and Cognitive Support.

Abstract

As AI and robotics become increasingly integrated into healthcare and education, teachable social robots are emerging as promising tools for delivering personalized learning experiences and cognitive support. This project explores the application of the learning- by- teaching paradigm, in which children instruct a robot that acts as a peer rather than a tutor; creating a collaborative, low-pressure environment that promotes reflection and active engagement. At the core of this approach is an Interactive Reinforcement Learning framework that enables the robot to emulate the learning trajectory of a child. By incorporating real-time feedback from the learner, the robot progressively refines its behaviour, effectively simulating peer- level learning. This process not only supports the robot's adaptation but also enhances the child's own understanding through the act of teaching and correcting. To support natural and flexible interaction, the system integrates large language models (LLMs) to interpret children's verbal feedback, allowing for open-ended naturalistic communication. The project further investigates children's perceptions of teachable robots, with a particular focus on engagement, trust, and perceived competence.

A series of empirical studies conducted in British primary schools demonstrate that children who taught the robot outperformed those using non-interactive methods on learning tasks. The learning-by-teaching approach proved particularly effective for children with lower prior knowledge, who derived substantial benefit from guiding a peer-like agent-underscoring the potential of this model to support learners who often struggle in traditional classroom settings. By combining adaptive learning algorithms with socially meaningful interaction, this research advances the design of intelligent, inclusive educational technologies with applications extending beyond the classroom to cognitive training, therapeutic support, and broader healthcare contexts.

Bio

I am a PhD candidate and a Marie Skolodwska-Curie Action (MSCA) Fellow at Sheffield Hallam University, advised by Prof. Dr. Alessandro Di Nuovo. Prior to that, I earned my master in Robotics and Automation at Sorbonne University, and my bachlors in Electrical Engineering at Ecole Nationale Polytechnique. My research interests include Reinforcements Learning, Cognitive Robotics and Human-Robot Interaction.

Hanan Salam

Assistant Professor Computer Science,
New York University Abu Dhabi, UAE

Adaptive Social Robots for Personalized Productivity Coaching for College Students with ADHD:

A New Vision for AI in Healthcare

Abstract

Adaptive social robots hold significant promise for enhancing healthcare outcomes for individuals with neurodevelopmental disorders through personalized interventions. This talk introduces our research exploring how socially assistive robots (SAR) can support productivity and skill development among college students, particularly those with Attention Deficit Hyperactivity Disorder (ADHD). Drawing from participatory design methods and empirical studies, we present insights into creating interactive, adaptive robot companions capable of real-time, context-aware conversational coaching. We demonstrate how adaptive prompting techniques, leveraging AI-driven personalization, significantly enhance user engagement, motivation, and task management. By examining proof-of-concept implementations and user-centered designs, this work illustrates the transformative potential of personalized social robotics, outlining practical implications for advancing AI applications in healthcare settings.

Bio

Hanan Salam is Assistant Professor in Computer Science at New York University Abu Dhabi. She is also the director of Social Machines & Robotics Lab (SMART) & affiliated with the Center of AI & Robotics (CAIR). She is the co- founder of Women in AI, an international non- profit Do-Tank whose mission is to close the gender gap in the field of Artificial Intelligence through education, research, and events.

Hanan holds a PhD in Telecommunications, Information, and Communication Sciences and Technologies from Centra le Supélec in France, an engineering degree in Computer Science and Telecommunications from the Lebanese University, and a Masters degree in Control, Robotics, Signal and Image Processing from Ecole Centrale de Nantes, France.

After spending three years as a researcher and lecturer at the University of Pierre and Marie Curie (Sorbonne), she worked in the robotics industry where she was an R&D Engineer in AI and Robotics at A.I.Mergence, a startup specialized in intelligent autonomous robots for home security. Following, she worked as an independent consultant in AI and Data Science, in parallel with part- time lecturing at different French universities and engineering schools. She then joined Emlyon Business School as an associate professor in AI before joining NYUAD.

Her scientific interests include Artificial Intelligence for mental healthcare, Human-Machine Interaction (HMI), social robotics, computer vision, personalized machine learning, and affective computing. She has published several international peer-reviewed conference and journal papers on social robotics and intelligent affective computing. She is an advocate of technology for common good and an activist for women empowerment.

Tetsunari Inamura

Professor Brain Science Research Institute
Tamagawa University, Japan

AI and Robotics for Mental-Coaching Based on Self-Efficacy

Abstract

As AI and robotics become more deeply integrated into healthcare, assistive technologies are increasingly expected to go beyond addressing immediate needs- they must also contribute to users' long-term autonomy, confidence, and psychological well-being. A self-efficacy-oriented approach to Robotics AI offers a pathway toward this goal by focusing not on passive assistance but on empowering individuals to develop their capabilities. A key component of this approach is using Virtual Reality (VR) as a platform for simulating, analyzing, and refining human-robot interaction. VR-based digital twin environments provide a safe and flexible way to explore how assistive systems can physically, cognitively, and emotionally support users. These environments also enable the scalable collection of diverse interaction data, which is critical for developing adaptive and personalized care technologies. This talk introduces an implementation framework integrating physical assistive robots with VR-based interaction environments to enhance user self-efficacy. By presenting the design and application of such a system, the discussion will explore the concept of co-evolution between humans and robots and consider the future direction of healthcare robotics. Rather than functioning merely as responsive tools, assistive technologies are envisioned as partners that promote resilience, growth, and meaningful independence- pointing toward a future in which robotics contributes not only to care but actively empowers individuals to realize their full potential.

Bio

Tetsunari Inamura received his B.E., M.E., and Ph.D. degrees from the University of Tokyo in 1995, 1997, and 2000, respectively. He was a researcher in the JST CREST Program (2000 – 2003), focusing on symbol emergence in humanoid robots, and later served as a Lecturer at the University of Tokyo. From 2006 to 2023, he was an Associate Professor at the National Institute of Informatics and SOKENDAI. He is currently Head Professor at the Advanced Intelligence & Robotics Research Center, Brain Science Institute, Tamagawa University.

In 2010, he developed SIGVerse, an open platform for simulating human-robot interaction (HRI), which has been used globally over 5,000 times. He has organized the RoboCup@Home Simulation League for more than a decade and currently chairs the RoboCup Japan Committee for the @Home League.

He also serves as Co-Chair of the IEEE RAS Technical Committee on Cognitive Robotics and on the Steering Committee of IEEE Transactions on Cognitive and Developmental Systems. He is Vice President and Fellow of the Robotics Society of Japan (RSJ). His research interests include learning from demonstration, symbol emergence, HRI quality assessment, VR for HRI, and affective computing in assistive robotics.

Mohammad Modassir Firdaus

PhD candidate Mechanical Engineering Indian Institute of Technology Gandhinagar, India

Advancing Minimally Invasive Surgery:

A Cadaverically Validated Tendon-Driven Continuum Laparoscope for Colon and Abdominal Navigation.

Abstract

Robotic surgery has revolutionized modern medicine by merging advanced robotics with surgical expertise to enable minimally invasive procedures that reduce patient trauma, minimize blood loss, and accelerate recovery. Despite the proven efficacy of robotic systems in diverse operations, from prostatectomies to complex colorectal and orthopaedic surgeries, challenges persist in accessing confined anatomical spaces where instrument manoeuvrability is restricted and precise port placement is critical. With their flexible, snake- shaped structures, continuum robots offer a promising solution by conforming to intricate anatomical geometries and facilitating open- cavity interventions. This work presents a novel tendon-driven continuum laparoscope (TDCL) 3D printable using low-cost TPU, designed to navigate the human colon and abdominal region.

The robot is equipped with an integrated camera for real-time identification of infections and organs. The device has completed cadaveric clinical trials and is operated remotely via a joystick. Future work will integrate an AI-based image processing tool to enhance the detection of infectious tissue and provide dynamic, online navigational feedback. This innovation expands the capabilities of minimally invasive surgery and underscores the transformative potential of combining continuum robotics with artificial intelligence in advancing surgical care.

Bio

I am a PhD scholar in Mechanical Engineering at IIT Gandhinagar. My area of research is to study kinematics, dynamics, and control of tendon-driven flexible continuum manipulators (FCM).

Waseem Aziz

MD, Consultant Neurosurgeon Sheikh Shakhbout Medical City – SSMC UAE

Robotic Cerebrovascular and Bypass Surgery:

A Future of Enhanced Quality and Precision in Microsurgery

Abstract

The future of robotics in cerebrovascular surgery and Bypass surgery is poised to revolutionize patient outcomes through enhanced precision, control, and minimally invasive techniques. Future Robots will enable neurosurgeons to navigate complex neurovascular structures with unprecedented accuracy, reducing the risk of complications. Integration of robotics with artificial intelligence and imaging technologies promises even greater advancements in surgical planning and real-time decision-making. The future evolution of robotics in this field holds the potential to significantly improve the effectiveness and safety of cerebrovascular interventions.

Bio

Dr. Waseem Aziz is a Consultant and Chair of Neurosurgery at Sheikh Shakhbout Medical City (SSMC) Abu Dhabi. Dr. Waseem had his Masters (2003) and MD degrees (2010). He received training and worked in several hospitals in UAE and abroad. Consultant and head of the Department of Neurosurgery, Spine surgery, Mediclinic Hospitals, UAE November 2018– September 2021. Consultant Neurosurgeon in the Department of Neurosurgery, Spine surgery, Tawam hospital, Al Ain, UAE August 2014, October 2018. Consultant Neurosurgeon and associate professor, Neurosurgery and Spine surgery Department, Alexandria main university hospital, Mostafa Kamel hospital for Armed Forces, Alexandria police hospital.

He was graduated from Alexandria University, Alexandria Egypt in 1998, where he then joined the department of Neurosurgery, Alexandria faculty of medicine as a resident, then he became assistant lecturer in 2003, lecturer in 2010, and then appointed an assistant professor position in 2018. He had a Skull base, Cerebrovascular, Neuro-endovascular fellowship in Keio University, Tokyo, Japan in 2005, also a training in Neuro-endovascular at Fondation Ophthalmique Adolphe de Rothschild, Paris in 2007, and a research fellowship in Barrow Neurological Institute, Phoenix, Arizona 2008 to 2009. His research interest is in the field of cerebrovascular, skull base, spine, and endovascular neurosurgery. He lectures to under and postgraduates in neurosurgery.

Research Interest
Cerebrovascular, Skull base, Neuroendovascular, Spine, Endoscopic spine surgery, Robotics in Neurosurgery.

Cesare Stefanini

Professor and Director BioRobotics Institute
Scuola Superiore Sant'Anna, Italy

Biorobotics for Medicine:

AI Unlocking New Opportunities

Abstract

Biorobotics is a discipline at the intersection of biology and robotics, with applications spanning various domains, including environmental, societal, and healthcare fields. Biorobotics science and technology contribute in two keyways: by uncovering fundamental principles and mechanisms in natural systems often drawing transformative inspiration in the process and by serving life, either by assisting or repairing natural systems at both ecosystem and organism levels. This broad application domain aligns with the concept of One Health. Within this framework, this talk explores medical applications of biorobotics and how recent advances in AI have opened new avenues for the development and use of therapeutic and diagnostic systems. Starting from pressing yet unmet clinical needs, specific cases will be discussed, including: AI-enabled motion control for soft medical manipulators; the encoding and decoding of biosignals to interface artificial and natural systems, particularly in prosthetics; machine learning-driven automation of surgical tasks through human-robot collaboration with teleoperated surgical systems; and the extraction of diagnostic information from automated palpation of histological tissue. Additionally, insights will be shared regarding the selection of research domains with high-impact potential that are achievable and accessible in the short to medium term. The talk will also highlight the interdisciplinary and collaborative nature of research in the field of biorobotics.

Bio

Cesare Stefanini is the Director of the BioRobotics Institute at Sant'Anna School of Advanced Studies (SSSA) in Pontedera, Italy, where he also leads the Creative Engineering Design Area. He served as Dean of the Faculty of Applied Experimental Sciences at SSSA until 2023 and was the Director of the Healthcare Engineering Innovation Center at Khalifa University, Abu Dhabi, from 2018 to 2021.

He holds an M.Sc. in Robotics and a Ph.D. in Microengineering. His research spans multiple fields, including small-scale robotics, bioinspired systems, and mechatronics, with applications in medical, environmental, and industrial domains. He has received international recognition for developing novel actuators for microrobots and was a visiting researcher at Stanford University's Center for Design Research.

Dr. Stefanini is currently the principal investigator of five research projects, including two international projects funded by the European Commission. He has served as a scientific advisor to a leading robotic surgery company (MMI - Medical Micro-instruments SpA) and was awarded the Intuitive Surgical Research Award.

He has authored or co-authored over 230 peer- reviewed articles in international journals and conference proceedings. Additionally, he holds 18 international patents, 10 of which have been industrially exploited by world-leading companies such as Amazon Inc., Magneti Marelli S.p.A., General Electric Co., and Pirelli & C. S.p.A.

Dr. Stefanini is a member of the Academy of Scientists of the UAE and the IEEE Societies RAS (Robotics and Automation) and EMBS (Engineering in Med).

Anqing Duan

Visiting Assistant Professor Robotics Department MBZUAI, UAE

Skincare Services Empowered by Robotics and AI

Abstract

Skincare services are increasingly prioritized as individuals focus more on health and wellness. Advancements in robotics and artificial intelligence (AI) present promising solutions to improve skincare delivery. In this presentation, I will explore how robotics and AI can enhance skincare, in particular, cosmetic dermatology. Cosmetic dermatology often relies on photo-rejuvenation, a procedure that can be tedious and repetitive for beauty physicians. I will demonstrate how robotics and AI can increase automation and intelligence in photo-rejuvenation-based cosmetic dermatology, making these services more accessible and affordable.

Bio

Dr. Anqing Duan is currently a Visiting Assistant Professor in the Robotics Department at Mohamed Bin Zayed University of Artificial Intelligence (MBZUAI). He received his PhD degree in Robotics from the Italian Institute of Technology and the University of Genoa. His research expertise lies in developing algorithmic tools for robot motion tasks, with a focus on medical and healthcare applications. As a leading author, his work has been published by IJRR, TRO, and others. Dr. Duan holds several editorial positions, including Associate Editor for IJARS, ICRA, IROS, CASE, and ICARM, as well as a member of the Editorial Advisory Board for Industrial Robot. His academic achievements are recognized by the Swiss NCCR fellowship, the ROS New Generation Star Project, and the IEEE ROMAN Reviewer Award.

Cristina Piazza

Assistant Professor School of Computation, Information and Technology Technical University of Munich Germany

Toward Bioinspired Bionic Limbs

Abstract

Since the 16th century, science and engineering have endeavored to match the richness and complexity of the human hand sensory-motor system. In the last decade, novel theories and technologies in system design and control have suggested promising directions for the next generation of bionic aids. With a specific focus on two key bio-inspired elements, namely the natural softness found in biological systems and the synergistic motor control observed in humans, this talk aims to discuss engineering solutions to address current clinical challenges and meet the needs of subjects with limb loss.

From the mechanical design perspective, this talk will explore the potential of emerging trends, such as the use of soft robotics, proposing new strategies to optimize the performance of artificial hands. The second part of the talk will focus on bioinspired strategies for myoelectric control, highlighting the integration of advanced human- machine interfaces and the embodiment of artificial limbs. The goal of this research is not only to improve the functional effectiveness of bionic limbs but also enhance natural and safe user interaction, social acceptance, and overall quality of life of people with disabilities.

Bio

Prof. Piazza received a B.Sc. in Biomedical Engineering, a M.S. in Automation and Robotics Engineering and a PhD degree in Robotics (summa cum laude, 2019) from the University of Pisa (Italy). During her PhD, she had a prominent role in the participation to several international competitions: Mechanical Design Expert of the team UNIPI-IIT-QB in Robotic Grasping and Manipulation Competition at IROS 2016 (I place) and of the team SoftHand Pro in Cybathlon Powered Arm Prosthesis 2016 (V place), and Team Leader of the SoftHand Pro team in Cybathlon Powered Arm Prosthesis Global Edition 2020 (II place). She subsequently moved to Chicago (USA) where she worked as a postdoctoral researcher at the Department of Physical Medicine and Rehabilitation, Northwestern University and the Regenstein Foundation Center for Bionic Medicine, Shirley Ryan AbilityLab (former Rehabilitation Institute of Chicago). Since 2020, Prof. Piazza is tenure track assistant professor for Heathcare and Rehabilitation Robotics at the Technische Universität München (TUM).

Prof. Piazza is currently co-chair of the IEEE/RAS Technical Committees for Robotic Hand, Grasping and Manipulation (since 2022), and IEEE/RAS Technical Committees for Cyborgs and Bionic Systems (since 2023). She is Associate Editor for the IEEE Robotics and Automation Letters journal since 2023 and Editor-in-Chief for the conference IEEE/RAS/EMBS International Conference on Biomedical Robotics and Biomechatronics (BioRob) 2024. She has served as Associate Editor for the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) and IEEE/RAS/EMBS International Conference on Biomedical Robotics and Biomechatronics (BioRob) from 2020 to 2024. Prof. Piazza was General Chair of the 16th International Symposium on Human Friendly Robotics (HFR) 2023, and Financial Chair for IEEE/RAS/EMBS Biorob 2024 and IEEE/SICE International Symposium on System Integration (SII) 2025.

Dr. Piazza has received several academic awards, including the best paper award at the conference IEEE Humanoid 2012, the Dr. Kanako Miura Award, and PhD Talent 2019 award for the best PhD Thesis at the University of Pisa.

The research activity of Professor Piazza focuses on the areas of rehabilitation and assistive robotics. Her main research interests include the study of human movement, the design of artificial devices based on soft robotics technologies, the development of innovative control algorithms to address different levels of amputation and their assessment for robotic and prosthetic applications. The ultimate goal is to build intelligent prostheses and promote a natural integration of bionic limbs. She has also experience in designing and conducting clinical trials with subjects with limb loss, in close collaboration with national and international clinical partners.

Ke Wu

Visiting Assistant Professor Robotics Department MBZUAI, UAE

Enabling Safe and Natural Physical Interaction:

Deformable Robotic Systems in Healthcare

Abstract

Deformable robotic systems are emerging as promising tools for enabling safer, more adaptive, and human-centered physical interaction in healthcare. These systems are particularly well-suited for rehabilitation settings, especially physical therapy applications that involve direct contact with the human body-such as therapeutic massage, joint mobilization, and guided movement. Their compliance and flexibility allow for gentle, responsive assistance that helps relax muscles, restore mobility, and support motor function recovery in a comfortable and personalized way. Deformable robots also show strong potential in minimally invasive surgery, where safe navigation and soft-tissue interaction are essential. This talk provides an overview of key research trends, enabling technologies, and clinical applications in the field, while highlighting open challenges and future opportunities for deformable robotic systems in healthcare.

Bio

Dr. Wu is currently a Visiting Assistant Professor at MBZUAI. His research focuses on the fundamentals of deformable robotic systems, including soft robots, continuum robots, and compliant mechanisms, with particular interest in modeling, control, and design under complex multi-physics scenarios. He has worked on Pneumatic Artificial Muscles (PAMs) for rehabilitation under the supervision of Dr. Donal Holland, founder of the Soft Robotics Toolkit at Harvard, one of the most influential open platforms in the soft robotics community. During his Ph.D., Dr. Wu was part of DEFROST at INRIA, the main contributor to the SOFA Framework, a leading open-source simulator for soft robotics, widely used for modeling soft bodies and simulating physical interactions. His research spans theoretical foundations and application-driven design, with interests ranging from robotic manipulation, high-level decision-making to medical and rehabilitation technologies.

Sunil Agrawal

Professor Mechanical Engineering &
Rehabilitation and Regenerative Medicine
Columbia University USA

Reahabilitation Robotics:

Improving Everyday Human Functions

Abstract

Neural disorders, old age, and traumatic brain injury limit activities of daily living. Robotics can be used in novel ways to characterize human neuromuscular responses and retrain human functions. Columbia University Robotics and Rehabilitation (ROAR) Laboratory designs innovative mechanisms/robotics with these goals and performs scientific studies to improve human functions such as standing, walking, stairclimbing, trunk control, head turning, and others. Human experiments have targeted individuals with stroke, cerebral palsy, Parkinson's disease, spinal cord injury, ALS, and elderly subjects. The talk will provide an overview of these robotic technologies and scientific studies performed with them to demonstrate strong potential of rehabilitation robotics to improve human functions and quality of life of people.

Bio

Sunil Agrawal received a Ph.D. degree in Mechanical Engineering from Stanford University in 1990. He is currently a Professor and Director of Robotics and Rehabilitation (ROAR) Laboratory at Columbia University, located both in engineering and medical campuses of the university. Dr. Agrawal has published more than 500 journal and conference papers, 20 U.S. patents, and 4 books. He is a Fellow of the ASME and AIMBE. His honors include a NSF Presidential Faculty Fellowship from the White House in 1994, a Bessel Prize from Germany in 2003, and a Humboldt US Senior Scientist Award in 2007. He is a recipient of 2016 Machine Design Award from ASME for seminal contributions to design of robotic exoskeletons for gait training of stroke patients and 2016 Mechanisms and Robotics Award from the ASME for cumulative contributions and being an international leading figure in mechanical design and robotics. He is a 2023 recipient of a Paintal Chair from Indian National Science Academy. He was a Plenary Speaker at the 2024 IEEE International Conference in Robotics and Automation in Yokohama. He has successfully directed 40+ PhD student theses and has received Best Paper awards in ASME and IEEE sponsored robotics conferences. He is the founding Editor- in-Chief of the journal "Wearable Technologies" published by Cambridge University Press. He organized the IEEE BioRob 2020 conference in New York City and served as its conference chair.

Hideki Kadone

Associate Professor Institute of Medicine
Tsukuba University Japan

Innovative Medicine and Engineering Through Robotics and AI in Assistive Technologies – Hal, Qolo, and Motion Support Systems

Abstract

In this talk, I would like to review our clinical studies using a motion-assist robot HAL, as well as the development of other devices and applications, including Qolo, which assists with the sit-to-stand transition. Then, I will discuss the role of iterative progression in the domains of science, technology, and social implementation of assistive devices, aiming for innovation through robotics and AI.

Bio

Hideki Kadone is currently an Associate Professor at the Institute of Medicine and the Center for Cybernics Research, University of Tsukuba, as well as the Center for Innovative Medicine and Engineering, University of Tsukuba Hospital, Japan. He received his Ph.D. in Information Science and Technology from The University of Tokyo in 2008. His recent research focuses on human motion measurement, analysis, and development of assistive devices for clinical applications.

Ali Khalilian
Motamed Bonad
PhD Candidate Institute of Mechanical Intelligence Scuola Superiore Sant'Anna, Italy

Hybrid Elbow Exosuits for Upper Limb Rehabilitation:

A Soft Therapeutic Approach

Abstract

Advances in wearable robotics have paved the way for innovative solutions in upper limb rehabilitation. This presentation introduces a novel elbow exosuit developed as an advanced therapeutic tool designed to support and enhance rehabilitation sessions for patients with upper limb impairments. By employing a hybrid approach that combines the inherent compliance of soft, flexible materials with state-of-the-art control strategies, the exosuit offers a safe, adaptive, and comfortable experience for users. I will discuss the engineering challenges encountered during the design, development, and integration phases. Key aspects include the careful selection of soft materials that ensure both durability and flexibility, the incorporation of multi-sensor systems for real-time motion tracking, and the development of an interaction controller that dynamically adjusts assistance to meet varying patient needs. This session will highlight how these technical innovations address practical issues, such as reducing patient fatigue and enhancing the usability of the device in real-world clinical environments without requiring constant supervision by an engineer.

Additionally, I will explore emerging trends in personalizing exosuit control, including the integration of machine learning algorithms and large language models (LLMs) for adaptive and personalized control, as well as the application of biofeedback mechanisms that tailor assistance to individual rehabilitation needs.

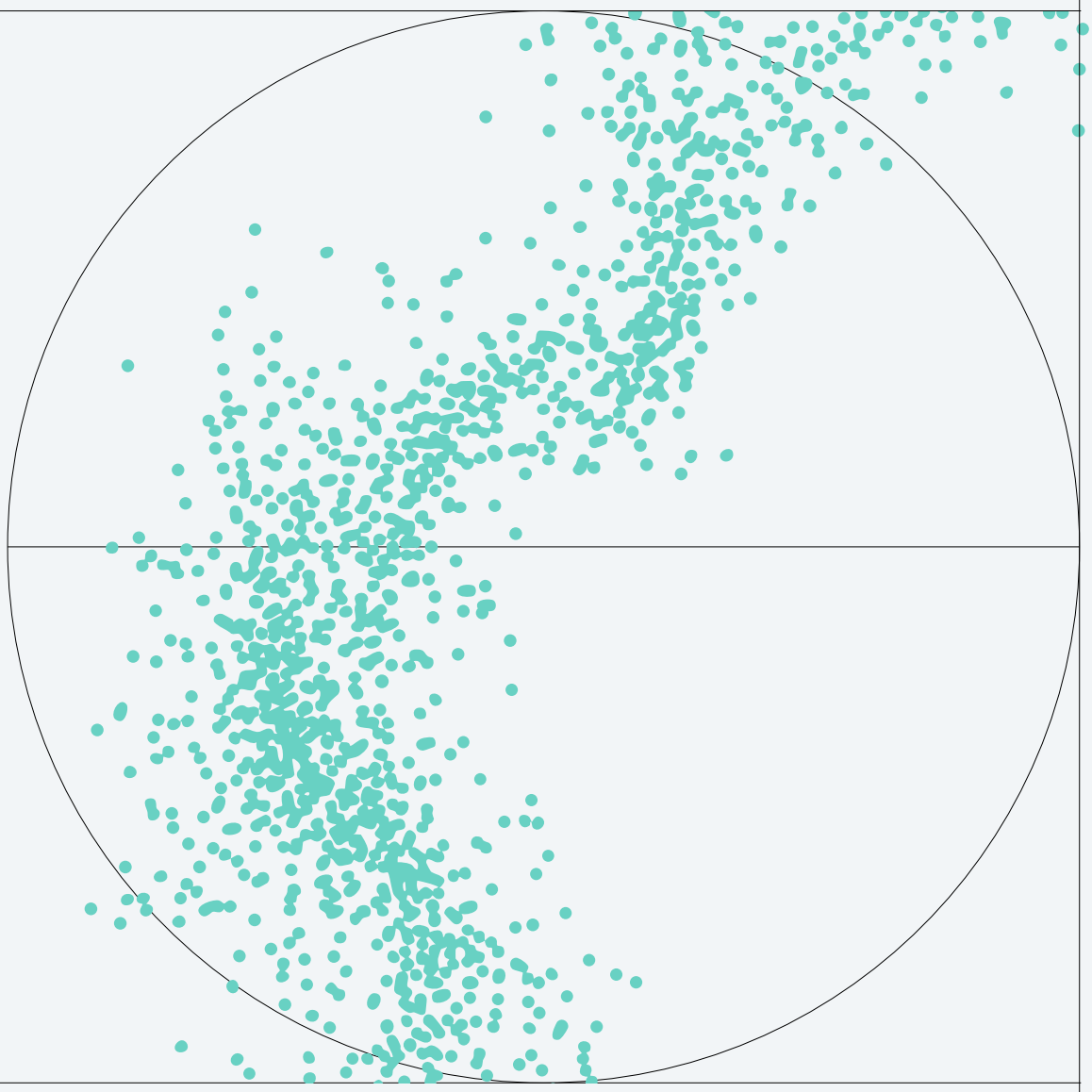
Ultimately, this session aims to initiate a discussion among researchers and clinicians on the transformative potential of intelligent, wearable rehabilitation devices within the healthcare sector, fostering future collaboration and innovation in personalized patient care. Preliminary experimental results and case studies will also be reviewed to underscore the exosuit's practical benefits.

Bio

Ali Khalilian Motamed Bonab is a Ph.D. candidate in Emerging Digital Technologies at Scuola Superiore Sant'Anna, Pisa, Italy, and a visiting Ph.D. candidate at ETH Zurich. He holds an M.Sc. in Mechatronics Engineering from Sabanci University, Istanbul, Turkey, and his research spans physical human–robot interaction, assistive and rehabilitation robotics, and wearable haptics. His current work focuses on developing soft and wearable rehabilitation technologies, exemplified by his development and clinical assessment of a hybrid soft- rigid elbow exosuit.

In collaboration with ETH Zurich and a clinical partner, Ali is also advancing a shoulder soft exosuit for clinical evaluation of its efficacy in rehabilitating patients with upper limb impairments.

Mohamed bin Zayed
University of
Artificial Intelligence



MASTER OF OPENING

Abdalla Swikir

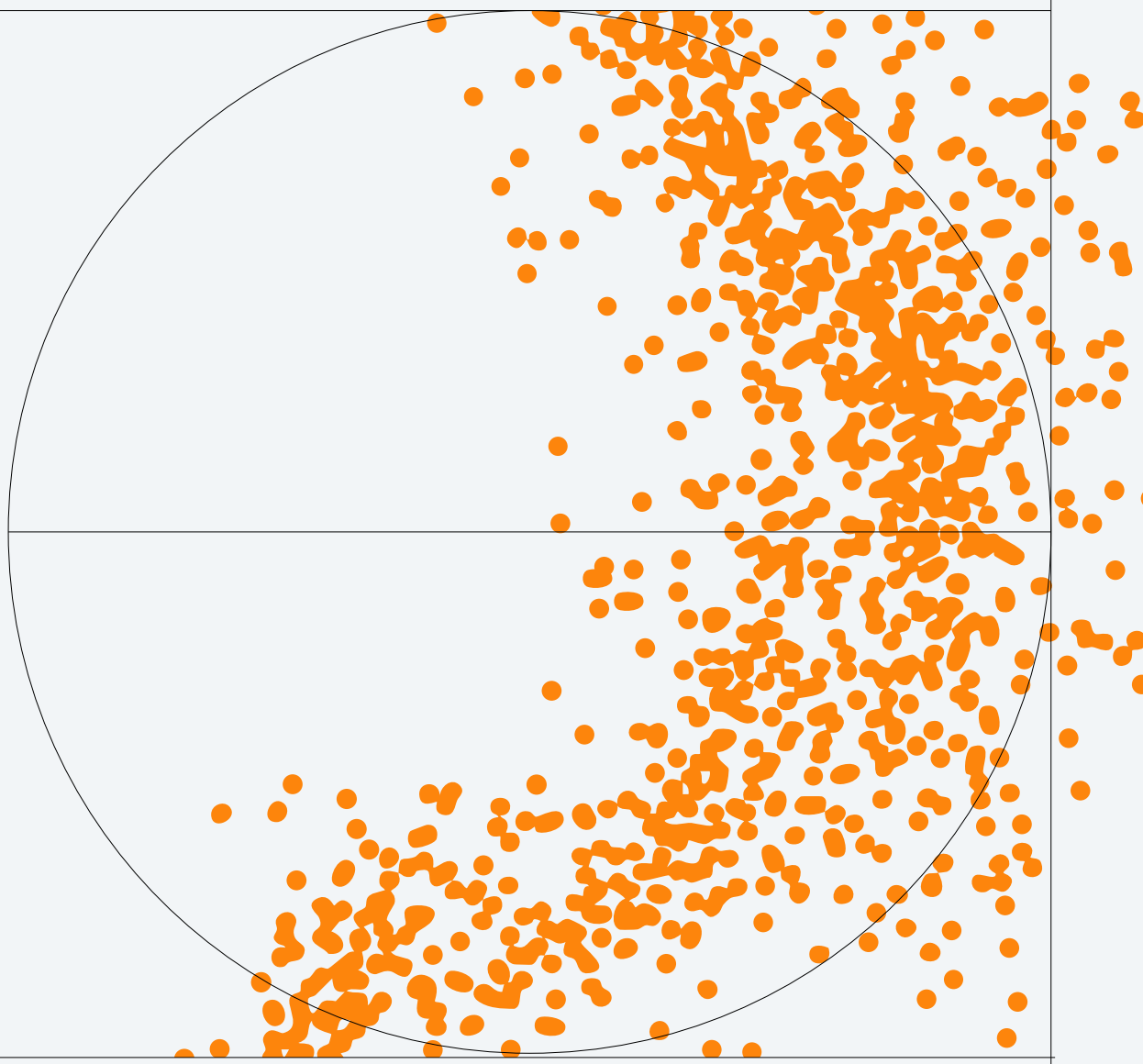
Assistant Professor Robotics
Department MBZUAI, UAE

Dr. Abdalla Swikir is Assistant Professor of Robotics at Mohamed bin Zayed University of Artificial Intelligence (MBZUAI), Abu Dhabi, UAE. He is also an IEEE senior member and the recipient of the 2023 IEEE CSS George S. Axelby Outstanding Paper Award and the 2023 IEEE Robotics and Automation Letters Best Paper Award. In addition, he is a member of several Technical Committees of IEEE Robotics and Automation Society. Dr. Swikir is also in the advisory Board and the Steering Committee of the International Elite Summer School in Robotics and Entrepreneurship.

Before joining MBZUAI, Dr. Swikir was a Senior Scientist and Teaching Coordinator at the Munich Institute of Robotics and Machine Intelligence (MIRMI), where he led the Robot Learning research groups and coordinated and delivered various robotics and control courses. Furthermore, he led several high-profile EU projects with a focus varying from Robotic design to applying AI on large-scale robotic systems.

Dr. Swikir's research interests lie at the intersection of artificial intelligence and robotics, where he focusses on pioneering new strategies that harness AI's potential to enhance robotic control systems. He is particularly drawn to designing and analyzing innovative robotic systems that integrate AI- driven safe learning methodologies, empowering robots and autonomous systems to adapt seamlessly to their environments while upholding safety standards. Dr. Swikir's work involves compositional analysis of large-scale interconnected systems and using symbolic control and control barrier functions to ensure stability across infinite networks.

Mohamed bin Zayed
University of
Artificial Intelligence



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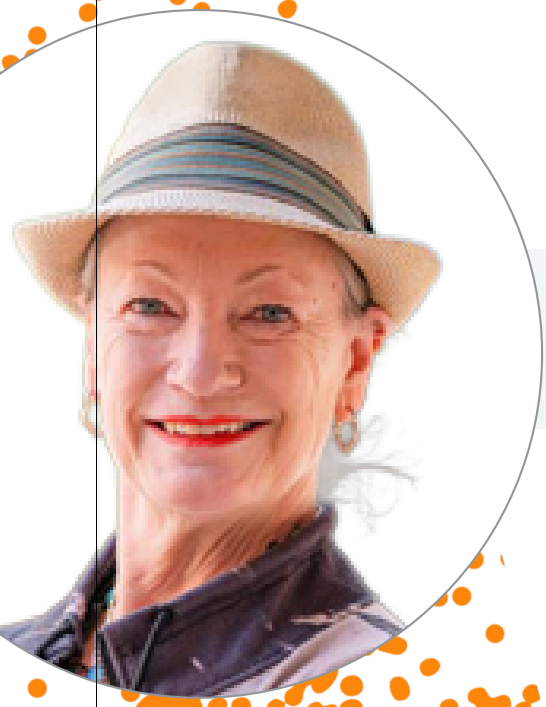


Mind, Body and Communication

Elizabeth Churchill

Department Chair and Professor of Human-Computer Interaction MBZUAI, UAE

Professor Churchill is an applied social scientist, interactive technology designer and social communications researcher. She has a background in psychology (neuro, experimental, cognitive and social), AI, and cognitive science. For the past 20+ years, she has drawn on social, computer, engineering and data sciences to create innovative end-user applications and services. For the past few years, she has been most active in the areas of ubiquitous and mobile computing, social media, computer mediated communication, locative media and internet/web sciences. During this time, Professor Churchill designed and evaluated enterprise and consumer- facing information/ communication applications and services for desktop, mobile, tablet and large screen devices. Prior to joining MBZUAI, Professor Churchill built research teams at Google, eBay, Yahoo, PARC and FujiXerox. Her background is in psychology, artificial intelligence and cognitive science. She draws on social, computer, engineering, and data sciences to create innovative end-user applications and services. Her current focus is on the design of effective designer and developer tooling for a new operating system, Fuchsia. She holds a Ph.D. from the University of Cambridge and honorary doctorates from the University of Sussex and the University of Stockholm. Professor Churchill is a member of the Association for Computer Machinery's (ACM) CHI Academy, is an ACM Fellow, and an ACM Distinguished Speaker. She served as the ACM's Vice President from 2018- 2020. In 2016, she received a Citris-Banatao Institute Award Athena Award for Women in Technology for her Executive Leadership. She has been named one of the top women leaders in UX over the last several years. And has received ACM SIGCHI's Lifetime Service Award (2023) and ACM's Lifetime Practice Award (2024).

Dialogue 2.1

Intervention

Olivier Oullier

Professor Behavioral and Brain Sciences
Aix- Marseille University, France

Dialogue 2.2

Medicine and AI

Cesare Stefanini

Professor Director of the BioRobotics Institute,
Scuola Superiore Sant'Anna, Italy

Rehabilitation

Dezhen Song

Professor and Deputy Chair of Robotics Department
MBZUAI, UAE

Professor Song's research focuses on robot spatial intelligence, which requires perceiving spatial information from multimodal sensory data and making decisions based upon it. Spatial intelligence is a fundamental ability for robots to perceive their environment and make motion plans to physically interact with it. His research focus includes algorithms for cross-modality perception and learning, robust navigation, scene representation and understanding, and tightly coupled perception and planning. All of the above are built on spatial and motion uncertainty analyses drawn from either explicit geometric/stochastic model- based approaches or data-driven machine learning (ML)- based approaches. Prior to joining MBZUAI, Professor Song was a professor and associate department head for academics in the Department of Computer Science and Engineering at Texas A&M University. From 2008 to 2012, Professor Song was an associate editor of IEEE Transactions on Robotics (T-RO). From 2010 to 2014, he was an associate editor of IEEE Transactions on Automation Science and Engineering (T-ASE). Professor Song was a senior editor for IEEE Robotics and Automation Letters (RA-L) from 2017 to 2021 and currently is a senior editor for IEEE Transactions on Automation Science and Engineering (T-ASE). He is also a multimedia editor and chapter author for Springer Handbook of Robotics. His research has resulted in one monograph and more than 130 refereed conference and journal publications.

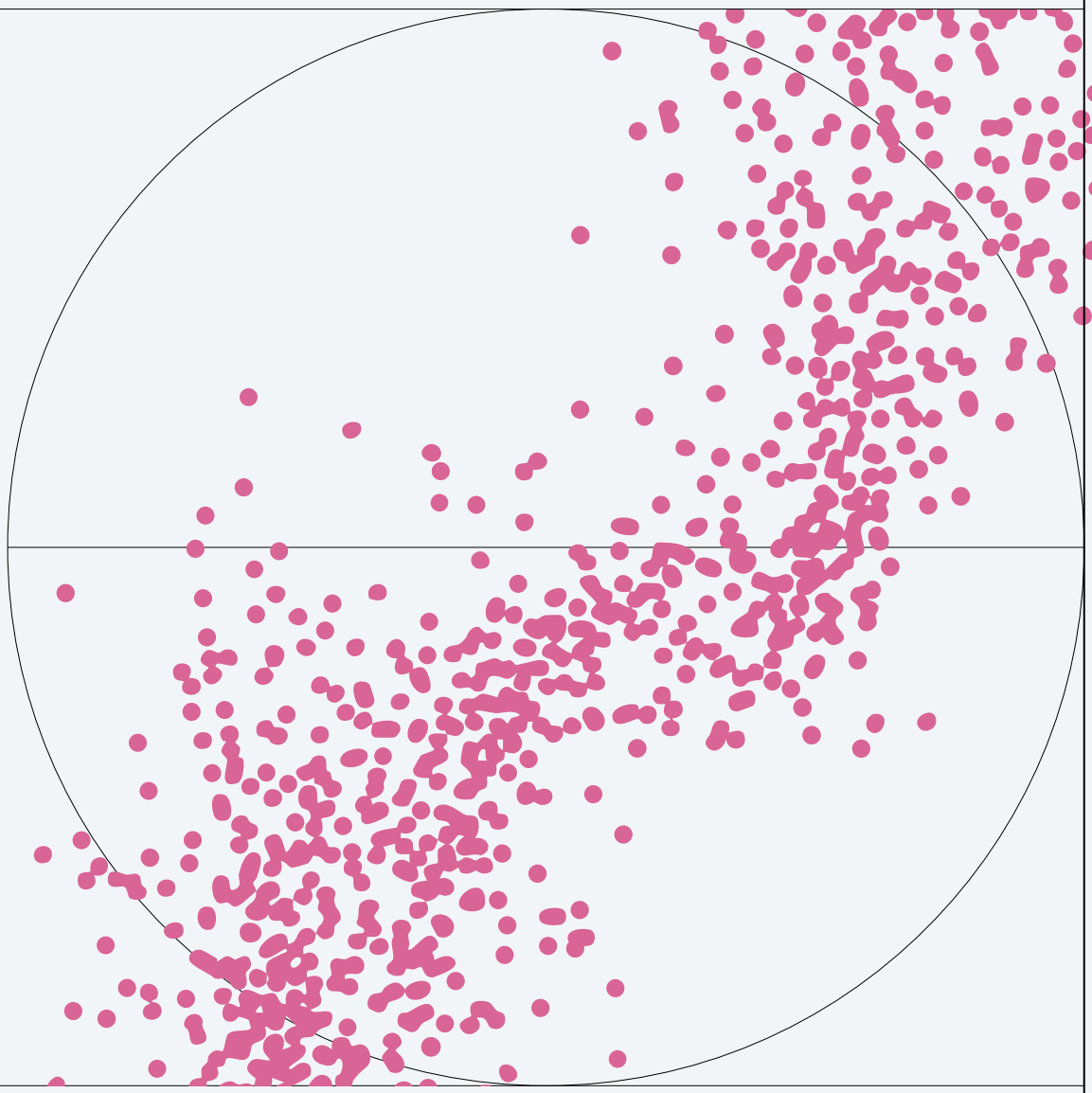
VENUE

Multi Use Hall Mohamed bin Zayed University of Artificial Intelligence, Masdar City, Abu Dhabi, UAE

A 15 minutes' drive from Abu Dhabi International Airport.

For direction, tell the taxi driver to go to “Siemens Energy Building” in Masdar City.

Mohamed bin Zayed
University of
Artificial Intelligence



APPENDIX

MBZUAI Offers the following Doctor of Philosophy (PhD) Programs in:

1. **Computer Science**
2. **Computer Vision**
3. **Machine Learning**
4. **Natural Language Processing**
5. **Robotics**
6. **Statistics and Data Science**

- Graduates wishing to undertake their PhD should have a strong desire to contribute to science and humanity through cutting-edge research, scientific literature, and thought leadership. They may wish to pursue a career in academia or at a research institute. PhD programs require an increased time commitment from students compared to the master's offerings as more emphasis is placed on the delivery of their thesis.

Program Highlights

- Fully funded program
- Access to state-of-the-art AI research labs.
- Opportunities for internships and industry collaborations.
- Scholarships available for eligible students.

Admission Requirements

- Master's/bachelor's degree in a related field.
- Strong academic record.
- English language proficiency.

MBZUAI Offers the following Master of Science (MSc) Programs in:

1. **Computer Science**
2. **Computer Vision**
3. **Machine Learning**
4. **Natural Language Processing**
5. **Robotics**
6. **Statistics and Data Science**

- Graduates wishing to undertake their PhD should have a strong desire to contribute to science and humanity through cutting-edge research, scientific literature, and thought leadership. They may wish to pursue a career in academia or at a research institute. PhD programs require an increased time commitment from students compared to the master's offerings as more emphasis is placed on the delivery of their thesis.

Program Highlights

- Fully funded program
- Access to state-of-the-art AI research labs.
- Opportunities for internships and industry collaborations.
- Scholarships available for eligible students.

Admission Requirements

- Bachelor's degree in a related field.
- Strong academic record.
- English language proficiency.

MBZUAI Offers:

AI Engineering
Focuses on developing AI models and systems.

AI Business
Emphasizes the application of AI in business strategies and operations.

Program Structure	Curriculum Highlights
• **Duration:** 3 years of study + 1-year industry placement. • **Credit Points:** 120 • **Intake:** Fall / August 2025	• Courses in machine learning, neural networks, and intelligent systems. • Entrepreneurship and business strategy modules. • Hands-on projects and real-world problem- solving.
Scholarships: Up to 100% scholarship available based on merit.	
MBZUAI's Bachelor of Science in Artificial Intelligence is a first-of-its kind AI degree, designed for those who want to lead, innovate, and push boundaries.	

Robotics - Open Rank Faculty Positions

Description
Mohamed bin Zayed University of Artificial Intelligence (MBZUAI) is looking for passionate and highly motivated Faculty. The successful candidates will be responsible for delivering high-quality instruction, mentoring students, contributing to curriculum development, and actively engaging in interdisciplinary research. Faculty members will also have the opportunity to collaborate with leading AI researchers, work on cutting-edge projects, and contribute to the university's growth as a hub for AI excellence.

The Department of Robotics is expanding, and we invite candidates at all levels (Assistant, Associate and Full Professor) to apply.

The Department of Robotics focus is on rigorous, high-impact, original research emphasizing robot learning, and robot algorithms rather than the development of another robot hardware. Research topics include but are not limited to deep learning, control theory, robot manipulation, quadruped locomotion, HRI, robot-assisted surgery and healthcare, precision agriculture and indoor farming, recycling, and environment and infrastructure monitoring.

About MBZUAI – A Global Leader in AI Research and Education

MBZUAI is the world's first university dedicated exclusively to AI and is rapidly emerging as a global leader in the field. Since its establishment in 2020, MBZUAI has grown into a top-ranked AI institution, currently hosting 80+ world-class faculty and 330+ graduate students and ranking among the top 10 AI universities worldwide.

With ambitious plans to expand from 8 to over 20 AI departments and grow its faculty from 84 to 300 by 2030, MBZUAI is on a fast-track growth trajectory. By integrating academia, industry, and government collaboration, we are driving AI innovation to address real-world challenges in healthcare, sustainability, and beyond.

To further this vision, MBZUAI is launching its first Undergraduate (Bachelor's) degree programs next academic year and is actively hiring Teaching Faculty. Meanwhile, our Master's and PhD programs continue to expand, introducing new specializations in Statistics and Data Science, Computational Biology, and Human-Computer Interaction.

Why Join MBZUAI?

- **Top-Tier Compensation:** Competitive salaries aligned with leading global academic institutions.
- **Funding:** MBZUAI empowers researchers with resources and academic freedom, fostering groundbreaking AI advancements in an environment of innovation and independent inquiry.
- Exceptional Benefits:
  - Comprehensive health & life insurance
  - Relocation support for international faculty
- **State-of-the-Art Research Facilities:** Cutting-edge AI labs and high-performance computing.
- **Live in Abu Dhabi:** World's safest city, year-round sunshine, rich culture, and modern amenities.
- **Industry & Government Collaborations:** Work with top AI researchers, leading tech firms, and policymakers.

Qualifications

This position requires a PhD in Computer Science or a closely related field. Candidates should have demonstrated excellence in conducting innovative and impactful research, and an interest in mentoring students.

Application Instructions

To apply for this position, please submit the following:

- Cover letter
- Curriculum Vitae
- Statement of research vision and interests
- Statement of teaching interests, experience, and philosophy
- List of publications
- Name and contact details for three referees (reference letters from applicants will not be accepted, each referee will be contacted to upload their reference letter via Interfolio).

MBZUAI's mission includes fostering a diverse academic community. MBZUAI is an equal opportunity employer. The university actively recruits faculty from around the world, aiming to create an international and inclusive environment that reflects a wide range of cultures and perspectives.

Mohamed bin Zayed
University of
Artificial Intelligence