Vida Adeli

Vector Institute for Artificial Intelligence
Intelligent Assistive Technology and Systems Lab (IATSL), University of Toronto
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EDUCATION

University Of Toronto (UofT), Toronto, Canada
- Ph.D. in Department of Computer Science (CS) *Sep 2021 – **Present***
- Thesis: Computer Vision based human pose estimation, motion generation and gait assessment in older adults with frailty
- Supervisory Committee: Babak Taati, Andrea Iaboni, David Fleet, Animesh Garg

Ferdowsi University of Mashhad (FUM), Mashhad, Iran
- M.Sc. in Artificial Intelligence, Computer Science and Engineering *Sep 2015 – Feb 2018*
- Thesis: Multi-Stream Human Action Recognition Using Spatiotemporal Saliency Maps
- Supervisors: Prof. Ehsan Fazl-Ersi, Prof. Ahad Harati
- GPA: 19.21 / 20 (With First Rank Honor).

Ferdowsi University of Mashhad (FUM), Mashhad, Iran
- Bachelor of Science in Computer Engineering, Software *Sep 2010 – Sep 2014*
- Thesis: Object Recognition Using RGB-D data.
- Supervisor: Prof. Ahad Harati
- GPA: 17.10 / 20 (With Second Rank Honor).

Azadegan High School, Mashhad, Iran
- Diploma of Mathematics and Physics *Sep 2006 – Jun 2010*
- GPA: 19.14 / 20 (With First Rank Honor).

RESEARCH

INTERESTS

Computer Vision, Machine Learning, Image and Video Processing, Deep Learning, Generative Models, Pose Estimation and Forecasting, Human Activity Recognition, Visual Detection and Recognition, Ambient Intelligence, Healthcare AI Applications.

RELATED PROJECTS

- Generative Model for Human Motion and Pathology. *May 2024 – **Present***
  Designed a generative model based on residual VQ-VAE with transformers and VQ-diffusions for disentangled motion and pathology representation learning and generation, particularly for Parkinson's Disease.
  Supervised by Prof. Babak Taati

- EMotionDiffuse-GPT: Multi-modal LLM for Motion Style Transfer and Video Generation. *Sep 2023 – Apr 2024*
  A multi-modal project integrating human motion analysis, video interpretation, and emotional/body language insights. Used Vicuna and Llama large language models with diffusion models to generate controllable, emotion-aware motion sequences from video data.
  Supervised by Prof. Babak Taati

- The AMBIENT Project. Using computer vision technology to analyze gait and predict short-term falls risk in older adults with dementia. *Sep 2021 – **Present***
  Supervised by Prof. Babak Taati, Prof. Andrea Iaboni, in collaboration with the KITE Research Institute at Toronto Rehab , University Health Network, Canada.

- Interaction-aware (Human-Human/Object) Human Pose and Motion Forecasting *Aug 2019 – Dec 2021*
  In collaboration with Prof. Hamid Rezetofighi (Monash University & Stanford University), Prof. Ian Reid (University of Adelaide), Prof. Juan Carlos Niebles (Stanford University), Prof. Silvio Savarese (Stanford University). VL4AI & Stanford Vision and Learning lab, SVL

- NLP and ML based Performance and Risk Analysis of the Stock Market *Aug 2020 – Aug 2021*
  Supervised by Prof. Ehsan Fazl-Ersi, in collaboration with OcularAI Inc., Toronto, Canada

- Human Physical Demand Recognition and Body Pose Estimation for AI Job Analysis in Videos
  Supervised by Prof. Ehsan Fazl-Ersi, in collaboration with OcularAI Inc.,Toronto,Canada *Feb 2018 – Sep 2019*
- ML-based method for heart attack or death risk prediction for the next seven days after the patient is discharged from the hospital
  Supervised by Prof. Ehsan Fazl-Ersi, in collaboration with OcularAI Inc.,Toronto,Canada *Feb 2018 – Oct 2018*
- Graduate Thesis: A Multi-Stream Weakly-Supervised Framework for Human Action Recognition Using a spatiotemporal Actionness Map *Sep 2015 – Feb 2018*
  Supervised by Prof. Ehsan Fazl-Ersi, Prof. Ahad Harati
- Automatic Face Recognition System *May 2017 –Oct 2017*
  Supervised by Prof. Ehsan Fazl-Ersi
- Auto Detection and Segmentation of Retina Layers in OCT Medical Images *Jan 2017 – Jul 2017*
  Supervised by Prof. Mahdi Saadatmand-Tarzjan
- A New Formulation for Artificial Neural Networks using the Bilinear Similarity Function
  Supervised by Prof. Reza Monsefi *Sep 2016 – Apr 2017*
- Undergraduate Thesis: Object Recognition using RGB-D data.
  Supervised by Prof. Ahad Harati *Dec 2013 – Oct 2014*

PUBLICATIONS

Journals

2023 V. Adeli, N. Korhani, B. Taati, A. Iaboni, A. Sabo, S. Mehdizadeh, A. Flint, A. Mansfield, "Vision-based Ambient Monitoring of Gait for Dynamic and Short-Term Falls Risk Assessment in People With Dementia,", *IEEE Journal Of Biomedical And Health Informatics (JBHI)*.

2020 V. Adeli, E. Adeli, I., Reid, J. C. Niebles and H. Rezatofighi, "Socially and Contextually Aware Human Motion and Pose Forecasting," *IEEE Robotics and Automation Letters (RA-L), 5(4), pp.6033-6040*.

2019 V. Adeli, E. Fazl-Ersi, and A. Harati, "A component-based video content representation for action recognition," *Image and Vision Computing, 90, p.103805*.

Conferences

2025 V. Adeli, S. Mehraban, M. Mirmehdi, A. Whone, A. Fasano, A. Iaboni, and B. Taati "GAITGen: Disentangled Motion-Pathology Impaired Gait Generative Model – Bringing Motion Generation to the Clinical Domain", *IEEE Conference on Computer Vision and Pattern Recognition (ICCV2025 - submitted)*.

2025 V. Adeli, I. Klabucar, B. Filtjens, M. Mirmehdi, A. Whone, D. Wang, D. Coelho, A. Iaboni, and B. Taati "ArchGait: An Archive of Clinical Gait Motions as Surface Shapes and Clinical Scores", *IEEE International Conference on Computer Vision (NeurIPS2025 - submitted)*. (Website: care-pd.ca)

2025 A. Kazerouni, S. Mehraban, V. Adeli, and B. Taati "Any3DStyle: Single Image-Conditioned Training-Free 3D Style Transfer for In-the-Wild Objects and Styles via Gaussian Splatting", *IEEE International Conference on Computer Vision (ICCV2025 - submitted)*.

2024 V. Adeli, S. Mehraban, I. Campose, Y. Zarghami, A. Sabo, A. Iaboni, and B. Taati "Benchmarking Skeleton-based Motion Encoder Models for Clinical Applications: Estimating Parkinson's Disease Severity in Walking Sequences", *IEEE International Conference on Automatic Face and Gesture Recognition (FG2024)*.

2024 S. Mehraban, V. Adeli, and B. Taati "MotionAGFormer: Enhancing 3D Human Pose Estimation with a Transformer-GCNFormer Network,", *Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV2024)*.

2024 I. Klabucar, V. Adeli, S. Mehraban, B. Taati, and A. Iaboni "Evaluating AI Models for Analyzing body Movements for Predicting Gait Severity in Parkinson's Disease Across Clinical Datasets,", *Annual Canadian Movement Disorders Meeting- Abstract Submission (MDM2024)*.

2023 C. Malin-Mayor, V. Adeli, A. Sabo, S. Noritsyn, C. Gorodetsky, C. Fasano, A. Iaboni and B. Taati "Pose2Gait: Extracting Gait Features from Monocular Video of Individuals with Dementia,", *Ambient Intelligence For Healthcare (AmI4HC) International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI2023)*.

2021 V. Adeli, M. Ehsanpour, J. C. Niebles, I. Reid, S. Savarese, E. Adeli and H. Rezatofighi, "TRiPOD: Human Trajectory and Pose Dynamics Forecasting in the Wild," *IEEE International Conference on Computer Vision (ICCV2021)*.

2020 V. Adeli, E. Adeli, I., Reid, J. C. Niebles and H. Rezatofighi, "Socially and Contextually Aware Human Motion and Pose Forecasting," *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2020)*.

2018 V. Adeli, E. Fazl-Ersi, and A. Harati, "Enhancing Human Action Recognition through Temporal Saliency," *International Conference on Pattern Recognition and Artificial Intelligence (ICPRAI 2018)*, Canada.

2018 V. Adeli, E. Fazl-Ersi, and A. Harati, "A New Representation For Human Activity Recognition in Videos Using a Saliency Map," *4th International Conference on New Studies in Computer and IT*, Mashhad, Iran.

Benchmark and Workshops

2024 Archive of Large-scale Parkinsonian Gait Meshes Dataset (In Progress)

2021 Created SoMoF: SOcial MOtion Forecasting Benchmark, http://somof.stanford.edu/

2021 1st Workshop, Benchmark and Challenge on Human Trajectory and Pose Dynamics Forecasting in the Wild, *ICCV2021*
Organizers: Andrew Sharp, Vida Adeli, Juan Carlos Niebles, Ehsan Adeli, Silvio Savarese, and Hamid Rezatofighi.
Speakers: Angjoo Kanazawa, Kris Kitani, Siyu Tang, Rita Cucchiara, Marco Pavone.

Posters

2023 V. Adeli, S. Mehraban, A. Iaboni and B. Taati. "Evaluating Vision-Based Human Motion Encoders for Gait Analysis and Parkinsonism Severity Prediction in Clinical Settings," *AGE-WELL Annual Conference;* 2023; Toronto, Canada.

2023 S. Mehraban, V. Adeli, and B. Taati. "MotionAGFormer: A Versatile Two-Stream Model for Efficient and Accurate 3D Human Pose Estimation in Ambient Monitoring Systems," *AGE-WELL Annual Conference;* 2023; Toronto, Canada.

2023 C. Malin-Mayor, V. Adeli, A. Sabo, S. Noritsyn C. Gorodetsky, A. Fasano, A. Iaboni and B. Taati. "Pose2Gait: Extracting Gait Features from Monocular Video of Individuals with Dementia," *AGE-WELL Annual Conference;* 2023; Toronto, Canada.

2023 Y. Sharma, V. Adeli, B. Taati, K. Patterson and A. Iaboni. "Evaluating the role of AI-falls risk predictive algorithms in a physiotherapist's falls risk assessment," *AGE-WELL Annual Conference;* 2023; Toronto, Canada.

2023 V. Adeli, C. Malin-Mayor, N. Korhani, B. Taati, A. Iaboni, A. Sabo, S. Mehdizadeh, A. Flint, A. Mansfield. "Monitoring Gait with Vision-Based Technology for Short-Term Falls Risk Assessment in Older Adults with Dementia," *The International Conference on Aging, Innovation and Rehabilitation (ICAIR);* May 8, 2023; Toronto, Canada.

2023 C. Malin-Mayor, V. Adeli,A. Sabo, A. Fasano, C. Gorodetsky, A. Iaboni, B. Taati. "Automatically Extracting Gait Features from Video of Older Adults.," *The International Conference on Aging, Innovation and Rehabilitation (ICAIR);* May 8, 2023; Toronto, Canada.

2022 C. Malin-Mayor, O. Shalash, A. Sabo, A. Fasano, C. Gorodetsky, V. Adeli, A. Iaboni, B. Taati. "Validating State-of-the-Art 3D Human Pose Tracking for Gait Analysis of Individuals with Parkinson's Disease," *AGE-WELL Annual Conference;* October 18-20, 2022; Regina, Saskatchewan.

2022 C. Malin-Mayor, V. Adeli, A. Sabo, A. Fasano, C. Gorodetsky, A. Iaboni, B. Taati. "Automatically Extracting Gait Features from Video of Older Adults.," *AGE-WELL Annual Conference;* October 18-20, 2022; Regina, Saskatchewan.

Talks

2021 "Towards Human Trajectory and Pose Dynamics Forecasting in the Wild", December 2021, Stanford Vision and Learning Lab (SVL), *Stanford University*.

Magazines

2018 V. Adeli, "A friendly introduction to Convolutional Neural Networks (CNNs)," *FUM-ESCAPE Issue*, Scientific Issue of Computer Science Department of Ferdowsi University of Mashhad, Iran.

SKILLS

- PyTorch, TensorFlow, Keras, Scikit-learn, Caffe, OpenCV, PCL, OpenGL, UML, RUP
- Python, Matlab, C/C++, C#, Java, SQL

TEACHING EXPERIENCE

Teaching Assistant - University of Toronto, Faculty of Applied Science and Engineering *2023 - **Present***
- APS360, Applied Fundamentals of Deep Learning (Winter, Summer and Fall 2023, Winter and Summer 2024)

Teaching Assistant - University of Toronto, Computer Science Department *2022 - **Present***
- CSC420, Introduction to Image Understanding (Fall 2022, 2023 & 2024)
- CSC2503, Foundations of Computational Vision (Winter 2023)
- CSC320, Introduction to Visual Computing (Winter 2024)

Workshops and Academic Tutorial Classes
- **Instructor** - FUM *2016 - 2018*
  - Image Processing and MATLAB training classes.
  - Python Programming Language for Artificial Intelligence Applications
- **Instructor** - FUM, International Campus *2017*
  - Image Processing and MATLAB training classes.
    ⋆⋆The course was held for foreign (non-Persian speaking) students in English.

Teaching Assistant of Graduate Courses - FUM - Computer Engineering Department (2016 - 2019) - International Campus (2018)
- Computer Vision - Advanced Artificial intelligence - Probabilistic Graphical Models - Deep Learning for Computer Vision - Introduction to Machine Learning - Advanced Image Processing

Teaching Assistant of Undergraduate Courses - FUM - Computer Engineering Department (2013 - 2015, 2018)
- Computational Intelligence - Fundamentals Of Machine Vision - Theory of Formal Languages and Automata - Compiler Design

English Instructor to the students of English as a Foreign Language (EFL), Ferdowsi Language Institute, Mashhad, Iran *Jun 2008 – Oct 2010*

R & D EXPERIENCES

Faculty Affiliate Researcher, Vector Institute, Canada *May 2023 – **Present***

Research Assistant, Toronto Rehabilitation Institute (UHN KITE), Canada *Sep 2021 – **Present***
- Reference: Prof. Babak Taati

Research Assistant, Vision & Learning for Autonomous AI (VL4AI) Lab, Monash University *Aug 2019 – Sep 2021*
- Reference: Prof. Hamid Rezatofighi

Research Associate, Machine Vision Lab, Ferdowsi University of Mashhad, Iran *Feb 2018 – Aug 2021*
- AI Specialist, OcularAI Inc., Toronto, Canada
- Reference: Prof. Ehsan Fazl-Ersi

Research Assistant, Machine Vision Lab, Ferdowsi University of Mashhad, Iran *Sep 2015 – Feb 2018*
- Reference: Prof. Ehsan Fazl-Ersi

Senior Software Developer and Project Lead, Hamta Rayaneh Co., Mashhad, Iran *Mar 2015 –*
- Reference: Prof. Saeed Abrishami *Mar 2016 and Summer 2013*

EXECUTIVE EXPERIENCES

VP of Events, KITE Trainee Executive Committee, UHN-KITE, Toronto, Canada *Sep 2022 – **Present***

Organizing Committee, 1st Workshop, Benchmark and Challenge on **Human Trajectory and Pose Dynamics Forecasting in the Wild**, (ICCV2021)

Member of Executive and Organizing Committee, International Conference on Computer and Knowledge Engineering (ICCKE 2016, 2017, 2018)

Executive Committee Chair of Programming Contests Center (ACM), FUM *2014*

COMMITTEE AND MEMBERSHIP

Program Committee, **3rd Workshop on Visual Perception for Navigation in Human Environments**: The JackRabbot Human Body Pose Dataset and Benchmark (ECCV2022)

Member of Reviewing Committee, IEEE Conference on Computer Vision and Pattern Recognition (CVPR2021, 2022)

Member of Reviewing Committee, IEEE International Conference on Computer Vision (ICCV2021, 2023)

Member of Reviewing Committee, IEEE European Conference on Computer Vision (ECCV2022)

Member of Reviewing Committee, IEEE International Conference on Intelligent Robots and Systems (IROS2020)

Member of Reviewing Committee, International Conference on Computer and Knowledge Engineering (ICCKE 2017, 2018, 2019, 2020)

HONORS & AWARDS

- **PPEF - Beatric "Trixie" Worsley Graduate Scholarship in Computer Science** 2025
- **Outstanding Reviewer,** IEEE Conference on Computer Vision and Pattern Recognition (CVPR). 2022
- **Mount Sinai Hospital Graduate Scholarships in Science and Technology** 2022
- **Best Paper Award,** 4th International Conference on New Studies in Computer and IT. 2018
- **Ranked 1st,** Among Students of M.Sc. graduate program of Artificial Intelligence, FUM (National and International Campus) *2018*
- **Ranked 1st,** Among all M.Sc. Students of Department of Computer Engineering, FUM *2018*
- **Ranked 2nd,** Among all B.Sc. Students of Department of Computer Engineering, FUM *2015*

REFERENCES

- **Prof. Babak Taati**
  Associate Professor
  Department of Computer Science, University of Toronto
  Institute of Biomedical Engineering, University of Toronto
  Scientist, Toronto Rehabilitation Institute – UHN
  Email: babak.taati@uhn.ca, taati@cs.toronto.edu

- **Prof. Andrea Iaboni**
  Associate professor
  Department of Psychiatry, University of Toronto
  Scientist, Toronto Rehabilitation Institute – UHN
  Email: andrea.iaboni@uhn.ca

- **Prof. Hamid Rezatofighi**
  Assistant Professor
  Department of Data Science and AI
  Monash University
  Email: hamid.rezatofighi@monash.edu

- **Prof. Juan Carlos Niebles**
  Senior Research Scientist, Stanford University
  Co-Director, Stanford Vision and Learning Lab
  Associate Director of Research, SAIL-Toyota Center for AI Research
  Director of Research, SAIL-JD AI Research Initiative
  Email: jniebles@cs.stanford.edu