Jan Ondras (Janko)

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Education

2024–2027 **PhD in Applied Mathematics, MIT,** USA, **(**GPA: **5.0/5.0)**

Courses: Probabilistic Computing, Symmetry for ML, Neural Circuits, Geometric PDEs, Multiagent Learning, Generative AI, Diffusion Models & SDEs, Geometric Matrix Algebra
Research: Probabilistic inference & Human behavior modeling; Geometric matrix algebra

2022–2023 **MSc in Mathematical Sciences, University of Oxford,** UK

Grade: **Pass with Distinction**
Courses: Topics in Fluid Mechanics, Elasticity and Plasticity, Topics in Computational Biology, Mathematical Geoscience, Mathematical Physiology, Mathematical Mechanical Biology
Research: Master's Thesis (advised by Prof. Dominic Vella):
Droplets on Lubricated Surfaces: The Effect of a Permeable Boundary

2021–Intrpt **PhD in Computer Science, Cornell University,** NY, USA (interrupted, GPA: **4.3/4.3**)

Courses: Program Synthesis, Robot Manipulation, Formal Methods for Robotics
Research: i) *Human-Robot Commensality: Bite Timing Prediction for Robot-Assisted Feeding in Groups*
ii) *Robotic Dough Shaping* (Prof. Tapomayukh Bhattacharjee, Prof. Malte Jung)

2014–2018 **MEng & BA (Hons) in Computer Science, University of Cambridge,** Trinity College, UK

4th year: Grade: **Pass with Distinction**
Probabilistic Machine Learning (Prof. Carl Edward Rassmussen),
Affective Computing, Computer Vision (Prof. Roberto Cipolla),
Machine Learning and Algorithms for Data Mining, Biomedical Information Processing,
Large-scale Data Processing and Optimisation (tutorial)

Master's Thesis (advised by Prof. Hatice Gunes):
Audio-driven upper-body motion synthesis on a humanoid robot

3rd year: Grade: **First Class – Senior Scholar**
Machine Learning and Bayesian Inference, Computer Vision, Advanced Algorithms, Digital Signal Processing, Information Theory, Natural Language Processing, Quantum Computing, Advanced Graphics, Computer Systems Modelling

Bachelor's Thesis (advised by Prof. Hatice Gunes):
Replicating Human Facial Emotions and Head Movements on a Robot Avatar

2nd year: Artificial Intelligence I, Logic and Proof, Prolog, Databases, Computation Theory, Complexity Theory, Mathematical Methods for Computer Science, Security I

1st year: Physics, Digital Electronics, Algorithms, Discrete Mathematics, Numerical Methods

2010–2014 **Grosslingova High School**, Bratislava, Slovakia
Matura: Maths (excellent), Physics (excellent), English (excellent), Slovak (excellent)

2003–2014 **Music School**, Bratislava, Slovakia
Accordion and Music Theory (excellent), Member of jazz and folk bands

Experience

2025 **IMO and IPhO Coaching**, Global Teaching Labs, Rwanda

2024 **Machine Learning PhD Intern |** FAIR, Meta, Menlo Park, USA
Multimodal foundation models (text, speech, emotions), LLM instruct-tuning at FAIR Comm. & Lang.

2023–2024 **Visiting Scientist |** MIT, USA
i) Probabilistic human behavior modeling in political networks;
ii) Neuro-mechanical coupling (Prof. Jorn Dunkel)

2022, 2023 **Software Engineering PhD Intern |** Google, Mountain View, USA
2023 – Augmented reality, 3D computer vision, ML for semantic perception & volumetric segmentation
2022 – Video chapter segmentation ML models (including LLMs) with YouTube & DeepMind

2025 **G-Research Spring Into Quant Finance Attendee** | France
2025 **Schonfeld PhD Summit & Datathon Attendee** | NYC, USA
2025 **PDE and Probability Summer School Attendee** | Sorbonne University, France
2024 **Princeton Machine Learning Theory Summer School Attendee** | Princeton University, USA
2022 **Neurosymbolic Programming Summer School Attendee** | Caltech, USA
2021 **INOVATO Business Camp Attendee** | Slovakia

2019–2021 **Machine Learning and Software Engineer** | Full-time | Cisco Webex, Norway
Intelligence for video conferencing systems: head detection, background replacement, live captioning
Project lead for summer interns
Two patent proposals (one defensive publication)

2019 **Research Assistant** | Institute for Creative Technologies, University of Southern California, USA
Member of the Multimodal Perception Group (Prof. Mohammad Soleymani, Prof. Jonathan Gratch)
Generating rapport in virtual agents using deep learning; Head gesture detection (ACM ICMI 2019, 2020)

2018–2019 **Machine Learning Specialist Intern** | Cognexa, Slovakia
Started a new project on anomaly detection in images for quality control in manufacturing lines

2016–2017 **Teaching Assistant** | University of Cambridge, UK
Teaching Assistant for undergraduate Databases course (SQL, Neo4j)

2015 **Software Engineering Intern** | ANASOFT, Slovakia
Developed UI using SAPUI5/OpenUI5, jQuery
Our team familiarized with new UI techniques and upgraded the existing project

Competitions SIG PhD Brainteaser Battle, MIT Brain-Computer-Interfaces Hackathon, Jane Street Hackathon, Malaria Control RL Competition, Google Hash Code, Facebook Hacker Cup

Publications

Google Scholar

2024 Karol A. Bacik*, **Jan Ondras***, Aaron Rudkin, Jörn Dunkel, and In Song Kim
Measuring the dynamical evolution of the United States lobbying network
Nature *(Under review)*

2022 **Jan Ondras**, Abrar Anwar, Tong Wu, Fanjun Bu, Malte Jung, Jorge J. Ortiz, Tapomayukh Bhattacharjee
Human-Robot Commensality: Bite Timing Prediction for Robot-Assisted Feeding in Groups
In 6th Annual Conference on Robot Learning (CoRL)

2022 **Jan Ondras**, Di Ni, Xi Deng, Zeqi Gu, and Henry Zheng
Robotic Dough Shaping
In 22nd IEEE International Conference on Control, Automation and Systems (IEEE ICCAS)
Oral presentation

2021 **Jan Ondras** and Svein Gunnar Pettersen
Recommendation System for Hiding Subtitles
In Technical Disclosure Commons

2020 **Jan Ondras**, Oya Celiktutan, Paul Bremner, and Hatice Gunes
Audio-Driven Robot Upper-Body Motion Synthesis
In IEEE Transactions on Cybernetics

2019 Mohammad Soleymani, Kalin Stefanov, Sin-Hwa Kang, **Jan Ondras**, and Jonathan Gratch
Multimodal Analysis and Estimation of Intimate Self-Disclosure
In 21st ACM International Conference on Multimodal Interaction (ACM ICMI)
Oral presentation, Best Paper Award

2018 **Jan Ondras** and Hatice Gunes
Detecting Deception and Suspicion in Dyadic Game Interactions
In 20th ACM International Conference on Multimodal Interaction (ACM ICMI)
Oral presentation

2017 **Jan Ondras**, Oya Celiktutan, Evangelos Sariyanidi, and Hatice Gunes
Automatic Replication of Teleoperator Head Movements and Facial Expressions on a Humanoid Robot
In 26th IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN)
Oral presentation

Projects

2022 *Robotic Dough Shaping*, Cornell, USA
Shaping a piece of dough-like deformable material into a 2D target shape

2021–2022 *Human-Robot Commensality: Bite Timing Prediction for Robot-Assisted Feeding in Groups*, Cornell, US
Data-driven models to predict when a robot should feed during social dining scenarios

2021 *Inferring Temporal Logic Specifications for Robot-Assisted Feeding in Social Dining Settings*, Cornell
Inferring temporal logic specifications of human eating behaviors (bite timing) during social dining

2019 *Deep Virtual Rapport Agent*, ICT USC, USA
Generating rapport in virtual humans using deep learning

2019 *Head Gesture Detector*, ICT USC, USA
Employed in multimodal self-disclosure analysis (ICMI 2019) and in *OpenSense* platform (ICMI 2020)

2017–2018 *Audio-Driven Upper-Body Motion Synthesis on a Humanoid Robot*, Cambridge, UK
Master's Thesis: deep learning system for audio-to-motion prediction and generation on Pepper robot

2017–2018 *Modelling Sleep Duration Using Gaussian Processes*, Cambridge, UK
Clustering people based on their sleep duration patterns modelled using Gaussian Processes

2017–2018 *Semi-Supervised Classification of Graph Nodes Using Exponential Decay*, Cambridge, UK
New method for semi-supervised classification of graph nodes

2017–2018 *Using Electrodermal Activity to Detect Deception and Suspicion During a Card Game*, Cambridge, UK
New dataset and automatic system for deception and suspicion detection during dyadic game interactions

2017–2018 *Patch-Based Classification of Breast Cancer Histology Images Using CNNs*, Cambridge, UK
Classification of four types of cancer tissue images, using small patches and several voting schemes

2017–2018 *Extracting Chemical-Disease Associations From the Biomedical Literature*, Cambridge, UK
Analysis of associations between chemical and disease co-mentions in biomedical literature

2016–2017 *Replicating Human Facial Emotions and Head Movements on a Robot Avatar*, Cambridge, UK
Bachelor's Thesis: classification of emotions, Kalman filtering of head movements, and consequent synthesis of both on Nao robot

2016 *Eye Tests on Demand (group project)*, Cambridge, UK
System for automated eye-testing in a hospital or public setting
My role: server-side eye-testing algorithm in Java

Other **Open-source contributions**: *Dive into Deep Learning* (book), *EfficientDet* & *Yolo v5* (object detection)
GitHub: *https://github.com/jancio/* (ML projects, bioinformatics, Online expenditure manager, etc.)

Achievements

2024 **SIG PhD Brainteaser Battle**, *1st place*, MIT, USA
2024–2025 **MathWorks Fellowship**, MIT, USA
2024 **Brain-Computer-Interfaces Hackathon**, *2nd place*, MIT, USA
2023 **Brasenose College Prize**, University of Oxford, UK
2021–2022 **Cornell Fellowship**, Cornell University, USA
2019 **Best Paper Award**, ACM ICMI conference, Suzhou, China
2017 **Senior Scholarship**, Trinity College, University of Cambridge, UK
2016 **Professional Prize Winner**, Eye Tests on Demand Project, University of Cambridge, UK
2016 **Cambridge2Cambridge Cybersecurity Challenge**, *Gold and Bronze Medals*, MIT, USA

2014 **International Physics Olympiad**, *Bronze Medal*, Astana, Kazakhstan
2013 **World Physics Olympiad**, *14th place*, online
2013 **International Experimental Physics Olympiad**, *25th place*, Moscow, Russia
2013 **International Physics Olympiad**, *Bronze Medal*, Copenhagen, Denmark
2013 **Slovak Physics Olympiad**, *2nd place*, national round, Slovakia
2012 **European Union Science Olympiad**, *Silver Medal*, Vilnius, Lithuania
2012–2014 3x **List sv. Gorazda**, *National award for scholastic achievements*, Ministry of Education, Slovakia

2010–2017 **First LEGO League** (programming and designing robots, teamwork, innovative team project)
Coach of our high school's team: *1st* at regional, and *10th* at international round, Czech Republic
Judge (robot and software design): 3 years at regional and international rounds, Slovakia
Team member: 2x *1st* at regional rounds, and *4th* at 4 international rounds, Germany, Poland

Technical skills (1 – beginner, 5 – expert)

Programming Python [5], C/C++ [4], Java [4], Kotlin [3], Functional: ELM and ML [3], Prolog [3], SystemVerilog [2], PHP [3], HTML [3], CSS [3], Javascript [3], QML [3], MySQL [3], Neo4j [1], OpenGL [1], C# [1]

ML	PyTorch [4], TensorFlow (Keras) [4], JAX [3], scikit-learn [3], AWS [3], MXNet [2]
Tools	LaTex [5], Unix shell [4], Git [4], Visual Studio Code [4], PyCharm [3], Eclipse [3], Matlab[3], ROS [3], Flume/Beam [3], Borg [2], Code Composer Studio [2], Blender [2], Android Studio [2], Streamlit [2]

Languages

Slovak	Native	
Czech	Fluent	
English	Fluent	
German	Intermediate	(Deutsche Sprach Diplom – B1, Sep 2014)
French	Beginner	(Cambridge University Language Centre – A2, Jun 2015)
Hebrew	Beginner	(Cambridge University Language Centre – A1, Feb 2018)
Chinese	Beginner	(Cambridge University Language Centre – A1, Jun 2018)
Norwegian	Beginner	(Lingu Norge – A1, Jun 2020)

Volunteering

2025 **Reviewer for IROS 2025**, IEEE/RSJ International Conference on Intelligent Robots and Systems
2024 **Reviewer for ICRA 2025**, IEEE International Conference on Robotics and Automation

2019 **Volunteer at S.A.V.E.S.** (Saint Augustine Volunteer Emergency Services), Los Angeles, USA
Collected and distributed donations for needy

2016–2022 **Supervisor at Trojsten FX** (international physics correspondence competition for high schools), online
Set up problems, and iteratively evaluated and guided students/contestants for several months

2016–2017 **Order of Malta Volunteers**, Cambridge UK
Served the homeless and visited seniors in nursing home

2014–2016 **Alumni lectures**, Grosslingova High School, Slovakia
Talks and guidance on admission process to UK and USA universities, studying and living abroad

2012–2020 **Team Leader at Manželské Stretnutia** (summer camps for families, non-profit organization), Slovakia
Organized program and took care of a group of kids

Interests

Science/Tech: Cognitive Science, Multimodal ML, Continuum Mechanics, Soft Matter, Mathematical Biology, Affective Computing, Computational Neuroscience, Human-Robot Interaction

Art:
Designing & making candles (local exhibition): *https://goo.gl/HiWQJX*
Designing & building paper models of buildings: *https://goo.gl/5GrWYy*
Glassblowing – Introductory Course, Cambridge MA, 2024
Playing accordion, piano, guitar

Sport:
Rock climbing and bouldering
- Ice Climbing Course, Norway, 2021
- Trinity College Field Club Colours (for intra- & inter-University competitions), Cam., UK, 2017
- Alpine Climbing Course, High Tatras, Slovakia, 2014
- Rock Climbing Course, Slovakia, 2013

Ski mountaineering
- Glacier Ski Course, Jotunheimen, Norway, 2021
- Snowkiting Course, Haugastøl, Norway, 2021
- Ski Mountaineering Course, High Tatras, Slovakia, 2016

Ultra-trail running
- Three 100+ km ultramarathons within 24 h time limit, Slovakia, 2015, 2016, 2018
- UTMB OCC finisher, Switzerland and France, 2018

Running
- Oxford Half Marathon, UK, 2022
- Cambridge Half Marathon, UK, 2018

Paragliding
- Course & Pilot's license PL-A, Slovakia, 2018

Yachting
- International Certificate of Competence for Skipper of Marine Pleasure Craft (zone C), 2021
- Radiotelephone Operator's Restricted Certificate for Maritime Service, Slovakia, 2021
- Course & Captain's License Voditelj Brodice Kategorija B, Croatia, 2019

Kayaking
- Våttkort Kayak Course, Norway, 2021

Other: Preparing summer camps for children, Playing board games