Denis Hadjivelichkov

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Education

PhD Robotics and Artificial Intelligence, *University College London* 2020 - Present
Within the CDT of Foundational Artificial Intelligence and Robot Perception and Learning Lab.

MSc Robotics and Computation *Distinction (90%)*, *University College London* 2019 - 2020
Thesis: Reinforcement Learning Whole-body Control of a Mobile Manipulator

BEng Mechatronic Engineering *First Class (82%)*, *University of Manchester* 2015 - 2019
Thesis: Autonomous Detection and Localization of Intrusive Plant Species in Drone Images

Work Experience

Applied Science Intern II, *Amazon* 2023 - 2024

- Developed computer vision models enabling robots to interact with items in Amazon warehouses.
- Achieved over 50% reduction in item identification failures using a novel multi-view approach

Doctoral Researcher, *University College London* 2020 - Present

- Working on self-supervised scene understanding and robot skill acquisition.

Postgraduate Teaching Assistant, *University College London* 2020 - 2023

- Co-supervising student dissertations on robot reinforcement learning and affordance learning
- Formulating student assessments and facilitating laboratory sessions
  (Robot Sensing and Manipulation, Probabilistic Modelling, C Programming; Robotic Systems)

Design and Verification Engineer - Image and Vision, *Arm* 2017 - 2018

- Designed and tested image processors within a fast paced environment.
- My output was successfully integrated into autonomous cars and security cameras

Research Intern - Computer Vision, *University of Manchester* 2016 - 2016

- Developed a mobile face recognition system capable of one-shot matching faces to names
- Integrated system with speech recognition as first steps towards a healthcare assistant

Research (Selected Works, more on Google Scholar)

One-Shot Transfer of Affordance Regions? AffCorrs!, CoRL 2022
Unsupervised method for one-shot transfer of robot affordance regions to novel scenes without fine-tuning, with semantic one-to-many part correspondence.

Fully Self-Supervised Class Awareness in Dense Object Descriptors, CoRL 2021
Method for self-supervised disentanglement of class-specific dense pixel descriptors in cluttered scenes.

Technical Skills

Machine Learning:	Self-Supervised/Unsupervised Learning, Graphical Models, Reinforcement Learning
Robotics:	Mechatronics, Simulation, Sensor Fusion, Control, Human-Robot Interaction
Vision:	Semantic Segmentation, Scene and Object Understanding, Projective Geometry
Software:	Python, C/C++, PyTorch, ROS, NVIDIA IsaacSim, Jax (basic), GoLang (basic)
Languages:	Bulgarian (Native), English (C2, CAE accredited), German (C2, TestDaF accredited)
Others:	Data analysis, Statistical modeling

Honors and Awards

Best Software Award for "Embedded Systems Project" University of Manchester
Designed a custom line following buggy, including PID control system and multi-modal sensing. 2017

Second Prize for "AskNigel: Autonomous Assistant" Student Hack IV
In 24 hours, we created an animatronic puppet able to hold basic conversations and provide services 2016

Community Outreach

Reviewer for CoRL, IROS, ICRA.
Non-profit work for Robogals - organizing STEM outreach workshops for young women.