

Artem MOLCHANOV

WEBPAGE: <https://amolchanov86.github.io/>
E-MAIL: a.molchanov86@gmail.com
LINKEDIN: <https://www.linkedin.com/in/artem-molchanov-7153986a>
GOOGLE SCHOLAR: <https://scholar.google.com/citations?user=BSJyuqQAAAAJ>

RESEARCH INTERESTS

Robotics, Artificial General Intelligence, Reinforcement Learning, Deep Learning.

EDUCATION

- AUG 2013 - MAY 2020 **PhD in Computer Science / Robotics,**
University of Southern California, Los Angeles, US
Thesis: Data Scarcity in Robotics: Leveraging Structural Priors and Representation Learning
Advisor: Gaurav S. Sukhatme
GPA: 3.88/4.0
- SEP 2004 - MAY 2010 **Engineering Degree in Robotics,**
Bauman Moscow State Technical University (BMSTU), Moscow, Russia
Thesis: Attitude and Heading Reference System for a
Remotely Operated Underwater Vehicle
Advisor: Sergey A. Egorov
GPA: 4.94/5.0. **Diploma with Honours**

PROFESSIONAL EXPERIENCE

- JUN-SEPT 2019 **Research Intern at Facebook AI Research, Menlo Park, CA, US**
[Project on Meta Learning via Learned Loss.](#)
- JUN-AUG 2017 **Research Intern at Nvidia, Seattle area, WA, US**
Contributed to 2 research projects:
- Project on [Automatic Curriculum Generation for Deep Reinforcement Learning](#) with Sparse rewards.
- Project on [Image-Centric Domain Randomization for Learning Human-Readable Plans from Real-World demonstrations](#). The work resulted in patent [US20190228495A1](#)
- JUN-AUG 2016 **Deep Learning Intern at Volkswagen group of America, Belmont, US**
[Research and bench-marking of deep compression algorithms using TensorFlow in application to autonomous driving.](#)
- JUN-AUG 2015 **Software Intern at Blue River Technology, Sunnyvale, US**
[Development of a plant classifier/detector for the vision system of the Lettuce Thinning Bot using convolutional neural networks.](#)
- MAR 2009 **Control Systems Engineer at**
JUL 2013 **Research Institute of Special Mechanical Engineering of BMSTU, Moscow, Russia**
Development of Underwater Robotic Systems:
- [Software and hardware control systems architecture design.](#)
- Development (C++, Matlab) of motion control and signal processing algorithms.
- Design, development (C++,Qt) and deployment of user interfaces for pilot control units.
- Deployment and field tests (ocean trials) of the entire ROV system.

ENTREPRENEURSHIP

[Swerve.ai](#) (FEB – AUG 2018): **Co-founder and Chief Data Officer (CDO)**. The startup targeted autonomous driving safety improvement by developing technologies for car planning and control at the limits of handling. As a CDO I was working on the perceptual system of the autonomous car. Particularly, I was developing [wet surface detectors from cameras and microphones](#) for the purpose of friction estimation.

LEADERSHIP

Student advisor:

Tao Chen - Sim-to-Real for Quadrotor Control. Earned 2019 Viterbi Master's Award.

Jialou Wang - Sim-to-Real for Quadrotor Control.

Pushpreet Singh - Sim-to-Real for Quadrotor Control.

Joe Mathai - RL for Active Perception

TEACHING

SUMMER 2020 Machine Learning (CS-567). Teaching Assistant.

FALL 2017 Deep Learning (CS-599). Teaching Assistant.

SUMMER 2018 Introduction to Programming (CS-103). Teaching Assistant.

2017 – 2019 Introduction to Computer Science (CS-109). Teaching Assistant.

FALL 2010 Invited talk on sensors in the course "Underwater Vehicle System Design"

SOFTWARE DEVELOPMENT SKILLS

Programming Languages: PYTHON, C/C++, MATLAB, ~~L~~TEX

Libraries and Frameworks: PYTORCH, TENSORFLOW, KERAS, ROS, OPENCV, QT

SW Development Tools: GIT, PYCHARM, CMAKE, QTCREATOR, KDEVELOP

Operating Systems: LINUX

GRANTS, SCHOLARSHIPS, AWARDS

MAY 2019, MAY 2017 USC Robotics Bekey Award for RESL compute infrastructure development

NOV 2016, MAY 2017 NVIDIA GPU grant

2005-2010 Recipient of stipend for outstanding students at BMSTU

VOLUNTEERING

ICRA 2014-2019, IROS 2014-2020, CoRL 2018, Journal of Ocean Engineering and Science (JOES) 2016, Autonomous Robots (AURO) 2019, IEEE Transactions on Robotics (T-RO) 2019

PRESS

Our work on RL for quadrotors was featured in [USC Viterbi news article](#).

INTERESTS AND HOBBIES

Astrophysics, Sports (Rock Climbing, Running, BJJ), Guitar, Motorcycles

PATENTS

J. Tremblay, S. Birchfield, S. Tyree, T. To, J. Kautz, **A. Molchanov**. [Learning robotic tasks using one or more neural networks](#), United States patent US20190228495A1, 2019.

SELECTED PUBLICATIONS

S. Bechtle*, **A. Molchanov***, Y. Chebotar*, E. Grefenstette, L. Righetti, G.S. Sukhatme, F. Meier. [Meta-Learning via Learned Loss](#). International Conference on Pattern Recognition (ICPR), Jan 2021

A. Molchanov, T. Chen, W. Hönig, J. A. Preiss, N. Ayanian, G. S. Sukhatme. [Sim-to-\(Multi\)-Real: Transfer of Low-Level Robust Control Policies to Multiple Quadrotors](#). IEEE/RSJ International Conference on Intelligent Robots and Systems, Nov 2019

J. Tremblay, T. To, **A. Molchanov**, S. Tyree, J. Kautz, S. Birchfield. [Synthetically Trained Neural Networks for Learning Human-Readable Plans from Real-World Demonstrations](#). IEEE International Conference on Robotics and Automation (ICRA), May 2018

A. Molchanov, O. Kroemer, Z. Su, G. Sukhatme. [Contact Localization on Grasped Objects using Tactile Sensing](#). IEEE International Conference on Intelligent Robots and Systems (IROS), 2016.

Y. Chebotar, K. Hausman, Z. Su, **A. Molchanov**, O. Kroemer, G. Sukhatme, S. Schaal. [BiGS: BioTac Grasp Stability Dataset](#). ICRA Workshop on Grasping and Manipulation Datasets , 2016

Z. Su, K. Hausman, Y. Chebotar, **A. Molchanov**, G. Loeb, G. Sukhatme, S. Schaal. [Force Estimation and Slip Detection for Grip Control using a Biomimetic Tactile Sensor](#). IEEE-RAS International Conference on Humanoid Robotics (Humanoids), Jul 2015.

A. Molchanov, A. Breitenmoser, G. Sukhatme. [Active Drifters: Towards a Practical Multi-Robot System for Ocean Monitoring](#). IEEE International Conference on Robotics and Automation (ICRA), May 2015.

A. Molchanov, A. Breitenmoser, G. Sukhatme. [Active Drifters: Sailing with the Ocean Currents](#). RSS Workshop on Autonomous Control, Adaptation, and Learning for Underwater Vehicles, 2014.

A. Molchanov, K. Chernenko, S. Egorov, A. Kutsenko. [Data processing and Control System of a Small Survey Class Remotely Operated Underwater Vehicle](#). IV All-Russian Tech Conference «Technical problems of exploitation of the World Ocean», pages 66-70, Vladivostok, Russian Federation, 2011.