Artem Molchanov

Personal Data

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Research Interests

Robotics, Reinforcement learning, Deep learning

Professional Experience

Current | **PhD candidate** at the **University of Southern California**, Los Angeles

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 into 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

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 (and other algorithms) for the vision system of the Lettuce Thinning Bot using convolutional neural networks

Mar 2009
Jul 2013 | **Control Systems Engineer** at
Research Institute of Special Mechanical Engineering of BMSTU, Moscow, Russia
Development of Underwater Robotic Systems:
- Implementation of motion control algorithms and sensor signal processing algorithms in C++ and Matlab
- Design of software and hardware architectures of control systems
- Design and implementation of user interfaces for pilot control units in Qt (C++)
- Participation at every stage of system's development, including field (at-sea) tests

Software Development Skills

Programming Languages:	Python, C/C++, Matlab, LaTeX
Libraries and Frameworks:	TensorFlow, Keras, Caffe, ROS, Qt, OpenCV
SW Development Tools:	Git, CMake, PyCharm, QtCreator, KDevelop
Operating Systems:	Linux, QNX, Windows
CAD Systems:	AutoCAD

Grants, Scholarships, Awards

May 2019, May 2017	USC Robotics Bekey Award (contributions toward lab development)
Nov 2016, May 2017	NVIDIA GPU grant
2005-2010	Recipient of stipend for outstanding students at BMSTU

Teaching

Fall 2017	Deep Learning course (cs-599 at USC). Teaching Assistant.
Spring 2017, 2018	Introduction to Computer Science (cs-109 at USC). Teaching Assistant.

Education

Aug 2013 - Present	**PhD condidate in Computer Science / Robotics**, **University of Southern California**, Los Angeles, US 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**

Latest Publications

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

S. Bechtle*, **A. Molchanov***, Y. Chebotar*, E. Grefenstette, L. Righetti, G.S. Sukhatme, F. Meier. Meta-Learning via Learned Loss. Preprint.

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.

Professional Activities

Reviewer: ICRA 2014-1019, IROS 2014-2019, CoRL 2018, Journal of Ocean Engineering and Science (JOES) 2016, Autonomous Robots (AURO) 2019, IEEE Transactions on Robotics (T-RO) 2019

Student advisor:
Jialou Wang - Sim-to-Real for Quadrotor Control.
Pushpreet Singh - Sim-to-Real for Quadrotor Control.
Tao Chen - Sim-to-Real for Quadrotor Control. Earned 2019 Viterbi Master's Award.
Joe Mathai - RL for Active Perception

Entrepreneurial Activities

Swerve.ai: Co-founder and (former) Chief Data Officer. Responsible for the development of the perception system for the autonomous car.

Interests and Hobbies

Robotics and AI, Sports (Rock Climbing, Running, BJJ), Motorcycles