

Michele Pratusевич

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EXPERIENCE

Root AI, Inc.

Director of Software Development, August 2018 - present

Woburn, MA (USA)

- Full-stack patent-pending software system design and development for autonomous tomato harvesting battery-powered mobile robot. Components included sensor selection and integration, RGBD perception, autonomous state machine, error and fault handling, motion control and trajectory planning, real-time firmware.
- Applied classical and modern computer vision techniques (CNNs, SVMs, optimization, ICP) for high-accuracy tomato, cucumber, strawberry detection, ripeness estimation, pose estimation, color balance and auto-exposure. Sped up vision pipeline using CUDA on a Jetson TX2 for edge computing.
- State machine design and implementation with FreeRTOS on STM32 microcontroller with ethernet and CANOpen communication stacks.
- Developed technique for measuring quality of depth cameras using 3D-printed fixtures. Published at the High-Accuracy Mobile Manipulation workshop at ICRA 2019. <https://arxiv.org/abs/1903.09169>.
- Stood up AWS data visualization, log ingestion, and root-cause analysis pipelines. Lead continuous integration, code review practices, Agile implementation, and hiring practices.
- Transitioned from senior IC to managing and mentoring software team of ICs: firmware, perception, and data management.

Amazon Go

Applied Research Scientist II, March 2016 - August 2018

Boston Metro West, MA (USA)

- Collaborated with research and engineering teams to design, develop, and deploy real-time machine learning algorithmic pipelines to embedded and cloud environments. Developed and tested algorithms for image quality measurement, activity understanding, and image retrieval. Developed root-cause analysis procedures for error analysis.
- Deep Learning Approximator project for speeding up neural networks. Led project from ideation through implementation and publication. <https://arxiv.org/abs/1806.05779>.
- Managed and mentored 2 intern research projects.

Ditto Labs, Inc.

Senior Computer Vision Engineer, July 2015 - March 2016

Cambridge, MA (USA)

- Created and maintained active learning object localization and detection pipeline for user-generated content.
- Designed and developed high-throughput distributed evaluation system on AWS with neural networks and RabbitMQ.

EDUCATION

Massachusetts Institute of Technology (MIT)

M. Eng. in Electrical Engineering and Computer Science

Sept 2014 - June 2015

- Advisors: Prof. Robert Miller and Prof. Antonio Torralba
- Thesis: *EdVidParse: Detecting People and Content in Educational Videos*

S.B. in Electrical Engineering and Computer Science. Minor in Mathematics.

Sept 2009 - June 2013

SKILLS

- Languages: English (native), Russian (proficient), Spanish (proficient)
- Development: Python, C++, Julia, git, vim, Agile / JIRA, NVIDIA Jetson, Intel Realsense
- Embedded and Networking: C, CUDA, FreeRTOS, STM32, AVR, RabbitMQ, ØMQ, CAN, I2C, SPI
- Web: React, React Native, Django, Flask, SQL, Postgres, Javascript, AWS (S3, EC2, DynamoDB, SNS, SQS)
- Research tools: Caffe, Tensorflow, Pytorch, OPENCV, PCL, Eigen, Jupyter, Jenkins

ACTIVITIES AND INTERESTS

- Python blog: <http://practicepython.org>; Julia blog: <http://learningjulia.com>
- Educational game for learning basic terminal commands: <http://mprat.org/Terminus>.
- Open source: <http://github.com/mprat>, <http://bitbucket.org/mprat>