

Michele Pratusевич

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EXPERIENCE

Root AI, Inc. → AppHarvest

Director of Software / Autonomous Systems, August 2018 - September 2021

Woburn, MA (USA)

- Full-stack patent-pending software system design and development for autonomous tomato harvesting mobile robot. Components included camera selection and integration, RGBD perception, autonomous state machine, error and fault handling, motion control and trajectory planning, calibration, real-time firmware.
- Applied classical and modern computer vision techniques (CNNs, SVMs, optimization, ICP) for high-accuracy tomato, cucumber, and strawberry detection; ripeness estimation; pose estimation; color balance, and auto-exposure. Sped up vision pipeline by >20x using CUDA and TensorRT on a Jetson TX2 and Jetson Xavier for edge computing.
- 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. Implemented continuous integration and code review practices with AWS, Gitlab, and Docker.
- Embedded systems prototyping, state machine design, and implementation with FreeRTOS on STM32.
- Transitioned from senior IC to hiring, managing, and mentoring software team of 5 ICs covering perception, firmware, and software systems. Implemented Agile / scrum.
- Root AI acquired by AppHarvest in April 2021. Multiple robots deployed across 3 sites worldwide.

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.

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, TensorRT, Intel Realsense, Docker
- Embedded and Networking: C, CUDA, FreeRTOS, STM32, AVR, RabbitMQ, ØMQ, CAN, I2C, SPI
- Web: React, React Native, Django, SQL, Postgres, AWS (S3, EC2, DynamoDB, SNS, SQS)
- Research tools: Caffe, Tensorflow, Pytorch, OPENCV, PCL, Eigen, Jupyter, CI/CD (Jenkins, Gitlab, Github)

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>