

# STEPHEN NUSKE

## DIRECTOR OF COMPUTER VISION AND MACHINE LEARNING

### WORK EXPERIENCE

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#### **Abundant Robotics – Director of Computer Vision and Machine Learning**

June 2015–Current

Leading the computer vision system development for an agricultural mobile manipulation robot. Responsible for the design from the ground up from the imaging sensors, image processing, 3D mapping, visual odometry to the machine learning frameworks. Deployed on autonomous field robot in commercial operation.

#### **Carnegie Mellon University – Systems Scientist now Adjunct Faculty**

Nov 2008 – Sep 2017 (Adjunct 2017-Current)

Principal Investigator on numerous industry and government research programs. Ran research group of engineers/students/post-docs developing technology for several industries. Extensive cross-disciplinary collaborations with plant-scientists and genetics/phonemics experts.

#### **Patton Nuske LLC – Computer Vision Consultant**

January 2013 – June 2017

Produced and deployed computer vision systems for a variety of companies. Including real-time closed-loop helicopter landing systems, autonomous ground vehicle sensing and control systems for domestic and agricultural applications.

#### **BSD Robotics – Computer Vision Intern**

November 2004-2005

Developed software for medical laboratory automation equipment. Designed algorithm to optimize placement of end-effector to take blood samples from filter paper card using optical scanner data.

### EDUCATION

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#### **PhD at University of Queensland, Australia & Commonwealth Science and Industry Research Organization**

2004-2009

Robust visual localization during drastic changes in lighting. Deployment on automated heavy-metal transport trucks and underwater autonomous submarines. Incorporated generative 3D lighting model to predict visual appearance.

#### **Bachelor of Software Engineering, University of Queensland, Australia**

2001 - 2004

High distinction in Artificial Intelligence, Discrete Mathematics, Computer Graphics. Minor electives in Philosophy.

### SKILLS

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- Technology conception, integration, execution
- Computer Vision; 2D/3D Object detection, recognition, classification, tracking, scene segmentation, localization, mapping.
- Machine Learning; ConvNets – Object-detection, Semantic Segmentation, Genotype Prediction. Caffe2/Pytorch, RandomForest, Semi-supervised and Un-supervised Learning Deployment.
- Languages (recent/frequent use); C++, Python, Bash, SQL/Postgresql
- Languages (familiar); Cuda, OpenGL, Matlab, Java



### PROFILE

Computer vision and machine learning leader with a passion to design robust systems that solve real-world problems. Focused at all levels of implementation, from low-level engineering through to high-level technology conception and delivery. Deployed computer vision systems at scale for cutting edge agricultural robotics and autonomous aerial systems. Experienced in many technical areas including object-detection, scene segmentation, localization, tracking, mapping, machine-learning, phenomics/genetics prediction, deep convolutional neural nets.

### CONTACT

PHONE:  
412.853.4870

WEBSITE:  
stephennuske.com

EMAIL:  
stnuske@gmail.com