Patrick Brandenburg

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Software engineer specializing in mobile robotics and simulation development. Project management experience in robotics, industrial, and aerospace applications. Comfortable handling multiple tasks at once and working in multi-disciplinary teams. Computer vision hobbyist with interest in robotics applications in simulation and real-world applications.

Professional Experience

Mobile Industrial Robots — North Reading, MA
Software Engineer — 1/2022 – Present

- Key contributor to development of platform to simulate mobile robot fleet
- Create ROS packages and services to monitor and control robot instances in Webots simulation application
- Implement REST API calls from MiR robotics platform in simulation to accurately recreate real-world application scenarios
- Participate in design reviews with product leadership group to target key development goals
- Contribute to refactoring efforts using SOLID principles as guidelines

AutoGuide Mobile Robots — North Reading, MA
Project Engineer — 10/2018 – 12/2021

- Contributed to important product documentation and testing related to safety compliance, platform specifications, and operational guidelines
- Managed new product introduction to support key customer applications
- Implemented vital engineering processes including change order process for both internal documentation and customer applications
- Managed debut customer installation of autonomous forklift platform
- Experienced in troubleshooting faults emanating from software, electrical, and hardware origins

GEA Mechanical Equipment US — Northvale, NJ
Project Engineer — 6/2016 – 9/2018

- Product lifecycle management of 15-20 customer specific fluid separation packages, valued at up to $1 million each, from conception to installation, in a fast-paced product development organization
- Lead multidisciplinary teams for the design of automated and pneumatic control systems integrating flow components and process requirements
- Created RFQ packages, develop design documentation packages, source vendors of electromechanical components, create and complete test plans

Chromalloy Gas Turbine — Orangeburg, NY
Product Manufacturing Engineer — 12/2015 – 6/2016

- Communicated regularly and effectively with engineers from GE Aviation, Rolls-Royce, and their subsidiaries for new and existing product lines
- Collected and analyzed a variety of data to substantiate new product engineering processes and gain customer confidence
- Regularly performed root cause analysis for nonconforming process fallout in material review to relieve quality issues and improve process yield

PHT Aerospace — Pompton Plains, NJ
Design/Aerospace Engineer — 7/2012 – 12/2015

- Designed mechanical aerospace components and subassemblies through reverse engineering, using SolidWorks 3D modeling, simulation, and analysis
- Modeled designs for safety, manufacturability, reliability, and testing in accordance with domestic and international standards

Education

Stevens Institute of Technology
Hoboken, NJ
MEng, Mechanical Engineering — 12/2015

Boston University College of Engineering
Boston, MA
BS, Aerospace Engineering — 5/2012

Recent Coursework

Deep Learning with PyTorch

- Implemented commonly used activation functions, loss functions, and optimization techniques from scratch
- Learned and built state-of-the-art convolutional neural network architectures such as ResNet, VGG, and AlexNet
- Used PyTorch to build deep learning pipelines for object detection, segmentation, and image classification on 2D images and video
- Utilized common deep learning practices, such as transfer learning and encoding/decoding, along with the TensorBoard toolkit

OpenCV Computer Vision II

- Advanced image processing and manipulation using OpenCV
- Introduction to neural networks using Keras, Caffe, and DLib libraries
- Applications built include smile detection, text detection, and custom object detector using YOLO framework

OpenCV Computer Vision I

- Introduction to computer vision image processing with OpenCV
- Implemented common image and video transformation techniques

Relevant Skills

C++, C#, Python, PyTorch, OpenCV, Pandas, Numpy, Keras, Scikit-Learn, DLib, Linux, Git

Additional Skills

Microsoft Office Suite, Mac OS, SolidWorks, AutoCAD, TensorFlow, IPython and Jupyter Notebook, Anaconda Distribution, MatLab, PostreSQL, SQLite, R/RStudio, HTML, CSS, PTC CREO/ProENGINEER, ProE Mechanica, LaTeX, Simulink, SAP