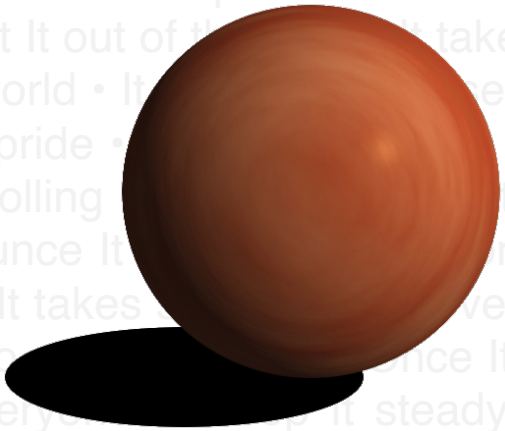
SEAN REYNOLDS

Principal R&D Engineer



Rapid Prototyping and Product Development

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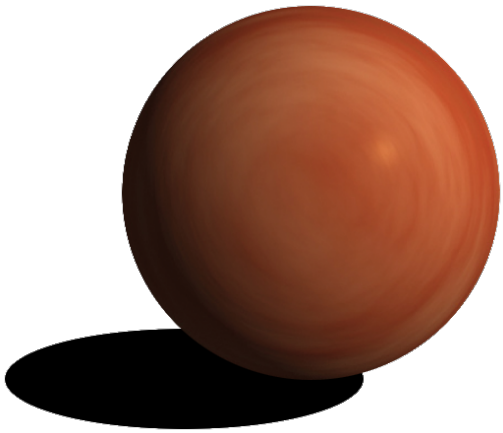

Technologies:
Python, PyTorch, OpenCV, C++, SQL, Javascript, Swift, TensorFlow, three.js, Blender, Unity

Machine Learning Expertise:
Developed systems for drones to detect crop diseases
Created generative AI for text-to-3D CAD object conversion
Implemented zero-shot object detection in drone feeds
Designed motor control algorithms for robotic learning
Developed single-shot search for 3D CAD and geometric data
Processed satellite images with tiling and recombination
Deployed object detection for camera phone images and video

Education:
M.S. in Computer Engineering: Washington University
Focus: Machine Learning, Computer Vision, Robotics
B.S. in Computer Science: Concordia University
Minor: Physics, Mathematics: Concordia University

Goals:
Target Field: Artificial Intelligence, Computer Vision
Target Location: Remote
Target Position: Leading a team of engineers, as a very solid individual contributor.

Experience:
Locations: London UK, Kolkata India, Saint Louis USA
Engineering Experience: 20+ Years
Leadership Experience: 10+ Years

Personal Qualifications

I bring to your company a deep expertise in innovative machine learning and software engineering. My experience spans high-level object-oriented programming to low-level embedded systems, with a strong grasp of electrical engineering and physics. This multi-disciplinary understanding enables me to develop tightly integrated hardware-software solutions. I excel at collaborating across all skill levels, learning from experts, and mentoring peers. My background in machine learning, computer vision, and robotics equips me to contribute effectively to advanced technology projects.

Biographical Information

I am passionate about engineering and am a naturally analytical person which is advantageous. As a young child I was constantly taking things apart to see how they worked and fixing electronics that had broken, something that to this day I still do.

At Hunter Engineering we created a new vision sensor which used lasers and cameras to scan the interior of the wheel and transmit the point clouds back to the PC. Once on the computer, I created algorithms for deciphering the pattern of dots even when there was missing or extra information in the image. Probabilistic learning algorithms were used to merge artificial intelligence and computer vision into a product for the company. I was a part of the product from initial conception through purchasing components through manufacturing and calibrations. When the company shipped the product it was a huge success.

At Physna I helped customers find 3D parts using machine learning. I created a single shot search algorithm that was able to find 3D CAD models from a smartphone camera photo. A user could aim their smart phone at an object and search our database to see if they can find a model to 3D print. At TurbineOne I created a system that allowed a user to search for objects in videos or satellite images using only a text prompt. You could type in “ships” and it would label all the ships it found in an image for you.

I enjoy creating products and would like to work for a group which is on the leading edge of research and development where I can contribute my determined resourcefulness to products, and achieve groundbreaking results. I excel at rapid prototyping by combining various technologies in innovative and creative fashions. We can help focus development to align with the companies vision by applying new technologies to improve products and team productivity together.

Thank you for your consideration.

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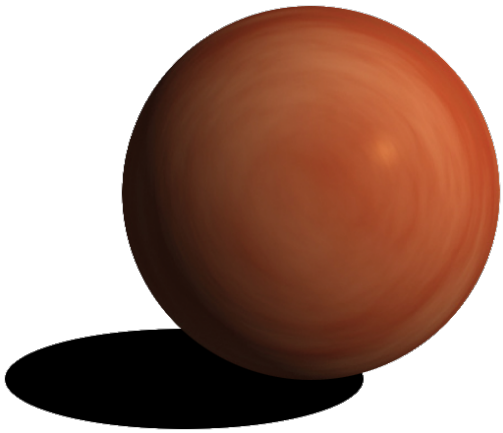

TurbineOne

Principal Machine Learning Engineer 2023-Present

- Developed an iterative training pipeline that incorporates human-in-the-loop (HITL) feedback mechanisms for model refinement on new datasets.
- Implemented a simple, intuitive "thumbs up/thumbs down" feedback system to streamline HITL input during the training process.
- Designed a what you see is what you get feedback experience for model training with Try My Model.
- Created zero shot image detection algorithms for quickly labeling training data with text prompts.
- Created a multi head yolo + clip vision trainer that enabled finding of specific targets with very little training data.

Physna (thangs.com)

Machine Learning Engineer, 3D Cad-Geometry 2021-2023

Adapted Resent50 and Xception networks to our problem space

- Iterated over many experiments for fine tuning and improving our accuracy metrics.
- Created Kubernetes training pipeline to deploy my research to the cloud for production.
- Our goal was a little different we were building one pipeline that would learn in a flexible way over many unique unseen datasets for our customers.

Created zero shot classification system that uses feature vectors rather than transfer learning

- To scale and save cost we adapted our solutions to a more generalized feature vector analysis of the cad models.
- This allowed us to scale from 15,000 unique models to over 10 million unique models across all of thangs.
- This method was so promising it became adapted to a more general mesh search in blender and image search in mobile.

Generative AI for 3D assets

- Worked with cutting edge generative AI such as Stable DreamFusion, ClipMesh, PointE and Text2Shape to create new objects from users text input.
- Worked with Text2Mesh, Get3D and ClipMesh to get textures and styles on to existing objects.
- We merged these projects into one project that took text and a seed file and output a new textured object in a fraction of the time of the cutting edge research. I called it crystalMesh because just as a crystal grows from a seed we were growing new geometries and textures from a seed CAD file.

Cognitive Spring

Principal R&D Engineer: Computer Vision, Deep Learning 2018-2021

TensorFlow and PyTorch

- Image classification of crops and non crop photos with ResNet in TensorFlow
- YOLOv4 for object detection of disease, pest damage and weeds within crops using PyTorch
- Full stack ML from labeling images, training models, deploying to serverless AWS and integrating results with React
- Working with TensorFlow to create complex humanoid motor control theory
- Deployment of machine learning to both edge devices and the cloud in AWS lambda's for a low cost solution

iOS

- Hardware integration with MFI certification
- iOS rapid development of MVP's using Swift
- Wireless integration with bonjour and cross platform communication
- Developing products for grant research for professors a leading university in the medical industry
- Using Depth Camera for point clouds and CoreML for object segmentation and SLAM

Hardware

- Designing and Creation of cSpring humanoid robot development project
- Integration of IMU data and point cloud data from OpenNI cameras
- Creating PCB to route signals and handle power management for mobile robotics
- 3D point cloud localization and mapping with SLAM for custom environments
- Mechanical engineering design of complex robot joints, CAD and 3D Printing

Mobisante

Principal Software Engineer, Medical Hardware 2016-2018

Formed the agile team and helped create the culture and agile process to unify our skills

- Hired a team of engineers from diverse backgrounds such as the Test team, QA, Business Analyst and Software Engineers.
- Worked with Product Managers to envision the best path forward for our product. Translated visions into a distilled direction that would be consistent and clear.
- Lead status meetings to bring our team together and up to speed on everyone's work.

Designed architecture for portable ultrasound system

- Created Interfaces for hardware API's and integrated systems from many different hardware venders.
- Created architecture for cloud archiving and retrieval of ultrasound data. The data was collected in a way that would lend itself to being useful to LSTM Neural Networks.

Rapid prototyping of software and hardware for bringing a product to market

- Worked with HoloLens to develop proof of concepts for the future of medicine
- Created industrial designs in CAD, 3D printed designs and built proof of concepts to show investors

Hunter Engineering

Principal R&D Engineer, Computer Vision - New Product Development 2012-2016

Creation of system for measuring wheel dimensions and detecting features such as installed weights

- Primarily focused on the algorithms for using the laser blobs and determining rim profiles from the images that the camera system captured. This was used to replace the manual dataset arms.
- To decipher data from images I used probabilistic learning algorithms to merge artificial intelligence and computer vision into a product for the company.
- The improvements our team made were a huge success, and they helped increase sales of the Balancer product significantly.

Contribute design ideas toward patents and future products for the company

- Helped evaluate new stereo vision based technologies
- Created a system of measuring runout and detecting other features, which we've patented, using rim profiles and an average profile to determine features on the wheel.
- Helped our lawyers evaluate patents for determining what we could create. I also discussed new ideas with lawyers to determine if the ideas would be new and novel ideas.

New product development from Design and Research to Development, Beta Testing and Production

- 3D Design of STL files both programmatically and by CAD for use with our 3D printer
- Worked with the Electrical Engineering team to maximize space and efficiency on our PCB.
- Created a calibration procedure for manufacturing of the camera based laser measurement system to determine the exact relationship between laser and camera of each configuration.

Byrne Software Technologies Inc.

Senior Software Engineer 2006-2011

- Computer vision processing using OpenCV integrated with IOS through C++
- Embedded handheld computer development for integrated systems
- High-Level Object-Oriented Design and Implementation
- Systems integration using various off the shelf modules for rapid development
- High volume multi-threaded application development
- Creation of polymorphic drop in plug and play DLL's
- Meeting with clientele to discuss new project proposals
- Continually demanded by clients to return and help with additional projects

BBA-reman

Director & Lead Software Engineer 2004-2006

- Formed a team of Software Engineers to take over and manage existing solutions.
- Embedded applications for use on 8051 microprocessors
- Research, Designed and Made ABS test equipment.
- CANbus network integration and packet creation
- Data acquisition and communication with automotive ECU's
- Expanding product lines through systems integration with research & development
- Responsible for the streamlining of the manufacturing process through a digital job board I created
- Traveled to India to live for 6 months while I hired and trained engineers
- Increased sales over $100,000 per month within 6 months through the new website
- Reduced warranty re-work by 75% by engineering effective test equipment
- Worked with CEO to expand business to cutting edge product development

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