Matt Angus

Computer Vision
Machine Learning

Summary Of Qualifications

- Extensive expertise using Tensorflow, creating CUDA ops, training and extending computer vision models with a focus on semantic segmentation and out-of-distribution detection
- Created the largest synthetic segmentation dataset to date
- Extensive development of software systems for autonomous robots

Engage

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mattangus.me
mattangus
mcangus (top 7% this year)
matt-angus

Select Awards

2016, 2017, 2018
Math Domestic Graduate Student Award

2016
University of Calgary Faculty of Science Dean's List

2016
Intelligent Ground Vehicle Competition Rookie of the Year

2016
Intelligent Ground Vehicle Competition 8th Place, out of 24

2016
IEEE Sumobots Competition

2015
IEEE Minibots Competition

Interests

Tough Mudder
Raspberry Pi
Rock Climbing

Citizenships

United Kingdom
Canada
Australia

Education

- **Master of Mathematics in Computer Science** – *3.98/4 Major GPA*
  The University of Waterloo, Sept '16 – Present
  - Semantic segmentation and pixel-level out-of-distribution detection.
  - Wrote custom TensorFlow unpool operation with CUDA GPU implementation, with $2\times$ speed up at inference time.
  - Created largest public synthetic segmentation dataset to date using GTAV (1 million+ images).
- **Bachelor of Science in Computer Science,** Pure Math Minor – *3.68/4 Major GPA*
  The University of Calgary, April '16
  - Collaboratively researched ontology inference for a semantic knowledgebase where I decreased the runtime of our inference algorithm by 97% to achieve a runtime in $O(x^n)$.
  - Two semester exchange at the University of Western Australia where I was able to grow personally, academically and culturally by studying and travelling in Australia and surrounding countries.

Experience

- **Research Engineer,** NXP Semiconductors, Ottawa, May '18 – Aug '18
  - Extended state of the art world models for autonomous driving.
  - Implemented and trained deep learning models, such as variational auto-encoders and RNNs, in TensorFlow using the Carla simulator.
  - Researched independently, providing key milestones to co-workers.
- **Application Developer,** Canadian Natural Resources, Calgary, Jan '15 – Aug '16
  - Consulted on architecting the data and business layers of a responsibility management system that tracked responsibilities globally, that extracted a hierarchy from a relational database.
  - Helped translate internal customer requirements into action items for our development team.
  - Championed and implemented bug tracking best practices across our development team, previously there was none.
- **Security Analyst,** Canadian Natural Resources, Calgary, May '12 – Dec '13
  - Took initiative and automated various manual processes through the use of scripts, saving the team about 3 hours per week.
  - Performed within the company's workflow to deliver access to various applications.

UCalgary Autonomous Robotics Club

- **Lead Software Developer,** 2013 – 2016
  - Architected and implemented over 50% of the core system including the real-time image processor for vehicle navigation.
  - Integrated fuzzy controller with systems data streams (GPS, Lidar, IMU)
- **Software Developer,** 2012
  - Experimented with motion planning algorithms such as A* search based motion planner and the distance transform to find open space.

Skills

●●●●	TensorFlow, C++, C#	●●●◐	Python, CUDA, cuDNN, Linux, OpenCV
●●●	SQL, Java, Git, LaTeX	●●◐	Haskell, Matlab

Publications

- *Efficacy of Pixel-Level OOD Detection for Semantic Segmentation*, **M. Angus** et al. (Under double blind review)
- *Unlimited road-scene synthetic annotation (URSA) dataset*, **M. Angus** et al. (DOI: 10.1109/ITSC.2018.8569519)
- *Trajectory prediction of traffic agents at urban intersections through learned inter-actions*, A. Sarkar et al. (DOI: 10.1109/ITSC.2017.8317731)