

# Siddharth Sharma

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## WORK EXPERIENCE

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### **Full Stack Developer, Office 365, Microsoft, Dublin**

[May 2016 – present]

#### **Enterprise Xcceleration:**

- Currently working on a cross organisational effort to deliver a high scale cloud solution that will help enterprises remove blockers, accelerate deployments of Office builds and view real-time insights on health of their asset
- Leveraging unsupervised machine learning algorithms to create an in-browser tool for visualising high dimensional datasets
- Presently setting up the UX and Service-side Automation framework
- Lead a virtual team of 3 developers to develop the API's and UX for Office assets related features
- Developed a module for asynchronously loading React components with dynamic imports. This enabled a 30% reduction in the initial load for the current project, and it's also being widely adopted by teams in Office 365
- Piloted and shipped [critical tooling](#) that has unblocked large Tier 1 enterprises (over 800 downloads and 130 unique enterprises) in the space of Office Addin and Macro compatibility

#### **Consumer Account Management:** Redesigned the Office Subscription and Perpetual management portal

- Transformed the legacy website into a Progressive Web Application using a new Front-End tech stack.
- Improved Page Load performance by 85% which resulted in a 30% increase in customer traffic
- Setup the infrastructure for local development and production builds. This reduced the developer time by 90%
- Redesigned the backend to a microservices architecture to ensure a 99.99% QoS
- Increased subscription renewal rates by 4.5% and improved user satisfaction by 40%

### **Electronics Design and Development Engineer, Avalon Sciences Ltd, UK**

[Sept 2015 – Feb 2016]

- Developed the architecture, RTL logic and test benches for the Telemetry Adapter System using VHDL
- Developed an Automated Test Equipment that reduced the test time by 90%. Increased the average device test coverage by 40%, thus achieving 100% coverage in most cases

## SKILLS

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#### **Proficient in:**

- *Deep Learning:* Python, Tensorflow, Keras, Scikit-Learn, NumPy, Matplotlib, Pandas
- *Computer Vision:* OpenCV, Scikit-Image
- *Web:* C#, Javascript, Typescript, React.js, Redux, Node.js, Webpack, Asp.NET MVC, Asp.NET Web API, SQL

#### **Experience with:**

- C++, PyTorch, CMake, Matlab, Hadoop

## EDUCATION

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### **Deep Learning (Term 1), Fast.ai**

[Mar, 2018 – Present]

- Key modules: Embeddings, Recurrent NNs, Convolutional NNs, Computational Linear Algebra

### **Self-Driving Car Nanodegree, Udacity**

[Oct, 2017 – Present]

- Term 1 (**completed**): Deep Learning using TensorFlow & Keras, and Computer Vision using OpenCV
- Term 2 (ongoing): Sensor Fusion, Localisation & Control using C++

### **Foundations of AI, Udacity**

[Jun – Sept, 2017]

- Key modules: Constraint Satisfaction, Search, Logic & Reasoning, Planning, Bayesian Nets, Hidden Markov Models

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## Machine Learning, Stanford University, Coursera

[Jun – Sept, 2017]

- Key modules: Regression, Classification, Neural Networks, SVMs, Principal Component Analysis and Clustering

## Electronics and Communications Engineering (MEng) – University of Bristol, UK

[2011 – 2015]

- 1<sup>st</sup> Class Honors ≈ GPA 4.00

## HOBBY PROJECTS

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### **Bayesian Deep Learning classifier (ongoing)**

- Researching the benefits of modelling uncertainty in Bayesian Deep Learning models for Computer Vision tasks
- Aiming to replicate the results achieved for pixel-wise semantic segmentation by the Cambridge Machine Learning Group as highlighted in this [research paper](#)

### **Extended Kalman Filter (EKF)**

- Fused data from LIDAR & RADAR sensors using an EKF to track a bicycle's position and velocity relative to the car

### **Vehicle Detection & Tracking**

- Created a pipeline to detect and track vehicles in a video using OpenCV, Histogram of Oriented Gradients (HOG) feature descriptor and Support Vector Machines
- Implemented a novel multiscale sliding windows method to search for detections and leveraged heatmaps to combine overlapping detections and remove false positives

### **Advanced Lane Lines Detection**

- Developed an advanced lane-finding algorithm using distortion correction, image rectification, color transforms, and gradient thresholding. Identified lane curvature and vehicle displacement
- Implemented a novel solution to overcome environmental challenges such as shadows and pavement changes

### **Behavioural Cloning**

- Built and trained a Convolutional Neural Network for end-to-end driving in a simulator, using TensorFlow & Keras
- Used Regularisation techniques to generalize the network for driving on multiple tracks

### **Traffic Sign Classifier**

- Built and trained a Convolutional Neural Network to classify traffic signs, using TensorFlow
- Performed data augmentation, image pre-processing and validation to guard against overfitting

### **Self Driving RC Car**

- Modified a RC car to handle: self-driving on the track, stop sign and traffic light detection, distance measurement using monocular vision and front collision avoidance

### **Miniflow**

- Implemented a mini neural network library from scratch with the goal of understanding backpropagation and computational graphs

## VOLUNTEER WORK

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- **Sprii Games:** Developed a Win32 Direct2D application that enables people with Cerebral Palsy play retro Xbox games with Eye tracking technology
- **Trinity College Industry Engagement Project:** Mentored a group of 5 2nd/3rd year university students with the aim of getting them excited to learn about - Microsoft technologies and software engineering in general