GAN TU (MICHAEL)

Pasadena, CA ▫ tugan@berkeley.edu ▫ +1 (626) 628-4911 ▫ **GitHub:** Michael-Tu ▫ **LinkedIn:** gantu ▫ **Web:** tugan.me

EDUCATION	**University of California, Berkeley	B.A. Computer Science	GPA: 3.925/4.0** 2015 – 2019

- 1 of 49 current honors students in the undergraduate computer science department
- **Relevant Courses**: Artificial Intelligence, Machine Learning, Deep Learning, Natural Language Processing, Data Structures, Machine Structures, Algorithms, Linear Algebra, Discrete Math, Multivariable Calculus, Statistics, Probability Theory, Signals & Circuits, Database, UI/UX Research

Udacity Nanodegree Programs: Self Driving Car, Robotics, Digital Marketing, Deep Learning, VR

Coursera: 5 classes in full stack web development, 28 Wharton specialization classes in business

TECHNICAL HIGHLIGHT

Proficient: Python, Java, Deep Learning, NLP, SQL, NoSQL, Tensorflow, Keras, PyTorch, AWS, Git, UNIX, Full Stack Web Development (HTML, CSS, Flask, Bootstrap), NumPy, Matplotlib, Pandas, NLTK, UI/UX

Familiar: Bash, C, C++, JavaScript (including jQuery, Ajax, Angular.js), MIPS, LISP, Apache Spark, Swift

EXPERIENCE

Full Stack Web Developer   June 2016 – Present
- Designed & deployed 6+ responsive web apps (Flask, Angular.js) full-stack for various client needs.
- Reengineered NASA Starlight program's legacy aerospace photon propulsion online modeling tool with a new file system, front-end interface, and more sophisticated modeling functionalities.

DL Researcher & External Officer | *Machine Learning at Berkeley*   Sept. 2016 – Present
- Researched lightweight, real-time object detection architectures that reduce the network size of FCN-based SqueezeDet by 12.5% with only 2% loss in mAVP using partial-layer weight quantization.
- Lead club external relations, graphic design, and marketing efforts. Worked on machine learning tutorials, which were all ranked top 3 on HackerNews and ranked #1 on Reddit ML sub-reddit.
- Wrote and deployed stock scrapers in AWS to crawl 1M+ S&P 500 minute-by-minute trading data from stock charts and store them in NoSQL and SQL database, later used to train trading predictors.

PROJECTS

Autonomous Vehicle -- Software | *Computer Vision & Deep Learning*   May 2017 – Present
- Experimented and trained various neural network models (end-to-end, CNN, FCN) that classify traffic signs at 94% mAVP, perform generalizable behavioral cloning on human driving behaviors, and conduct image segmentation of human figures, based directly from front-camera image stream.
- Integrated traditional image analysis techniques using OpenCV. Developed high-accuracy pipelines to identify lane lines and curvature, and to detect and track vehicles under varied lightings.
- Program Kalman filters and particle filters using sensor fusion and Markov localization to precisely determine the location of other vehicles on a map at single-digit centimeter-level accuracy.
- Build both PID controllers and model predictive controllers for advanced vehicle actuation.
- Construct finite state machines for path planning using data and model driven behavior predictions.
- Learn more from my comprehensive write-ups and video demos at code.tugan.me/self-driving-car.

Machine Linguists | *Natural Language Processing*   April 2017 – Present
- Engineered and trained a MEMM-based POS tagger (95.7% mAVP), a transition-based dependency parser (67% mAVP), and a pronominal coreference resolution parser (77%+ mAVP) with custom engineered features and self-implemented Markov models, and decoding & parsing algorithms.
- Engineered and trained both LSTM-RNN-based and seq2seq-based neural network models for English-French machine translation and Simpsons television scripts, language generation tasks.

Intelligent Bots | *Robotics*   May 2017 – Present
- Designed and implemented ROS-based prototypes that manipulate simulated robotic arms with six degrees of freedom for collision avoiding object localization, relocation, and motion planning.
- Built autonomous rover models for high fidelity environment mapping and rock sample extraction.