

# GAN TU (MICHAEL)

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| <b>EDUCATION</b>           | University of California, Berkeley   B.A. Computer Science   GPA: 3.925/4.0   | 2015 - 2019          |
|                            | <ul style="list-style-type: none"><li>1 of 49 current honors students in the undergraduate computer science department</li><li><b>Relevant Courses:</b> Artificial Intelligence, Machine Learning, Deep Learning, Natural Language Processing, Data Structures, Machine Structures, Algorithms, Linear Algebra, Discrete Math, Multivariable Calculus, Statistics, Probability Theory, Signals &amp; Circuits, Database, UI/UX Research</li><li><b>Udacity Nanodegree Programs:</b> Self Driving Car, Robotics, Digital Marketing, Deep Learning, VR</li><li><b>Coursera:</b> 5 classes in full stack web development, 28 Wharton specialization classes in business</li></ul>  |                      |
| <b>TECHNICAL HIGHLIGHT</b> | <p><b>Proficient:</b> 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</p> <p><b>Familiar:</b> Bash, C, C++, JavaScript (including jQuery, Ajax, Angular.js), MIPS, LISP, Apache Spark, Swift</p>   |                      |
| <b>WORK</b>                | Incoming Software Engineering Intern   <i>Apple</i>   | May 2018 - Dec. 2018 |
|                            | <ul style="list-style-type: none"><li>7-month internship working on Machine Learning, Deep Learning, and Natural Language Processing for Siri and other international technologies.</li></ul>   |                      |
| <b>EXPERIENCE</b>          | Full Stack Web Developer  | June 2016 - Present  |
|                            | <ul style="list-style-type: none"><li>Designed &amp; deployed 6+ responsive web apps (Flask, Angular.js) full-stack for various client needs.</li><li>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.</li></ul>   |                      |
|                            | DL Researcher & External Officer   <i>Machine Learning at Berkeley</i>  | Sept. 2016 - Present |
|                            | <ul style="list-style-type: none"><li>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.</li><li>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.</li><li>Wrote and deployed stock scrapers in AWS to crawl 1M+ S&amp;P 500 minute-by-minute trading data from stock charts and store them in NoSQL and SQL database, later used to train trading predictors.</li></ul>   |                      |
| <b>PROJECTS</b>            | Autonomous Vehicle -- Software   <i>Computer Vision &amp; Deep Learning</i>   | May 2017 - Present   |
|                            | <ul style="list-style-type: none"><li>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.</li><li>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.</li><li>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.</li><li>Build both PID controllers and model predictive controllers for advanced vehicle actuation.</li><li>Construct finite state machines for path planning using data and model driven behavior predictions.</li><li>Learn more from my comprehensive write-ups and video demos at <a href="http://code.tugan.me/self-driving-car">code.tugan.me/self-driving-car</a>.</li></ul> |                      |
|                            | Machine Linguists   <i>Natural Language Processing</i>  | April 2017 - Present |
|                            | <ul style="list-style-type: none"><li>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 &amp; parsing algorithms.</li><li>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.</li></ul>   |                      |