MICHAEL JANNAIN

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EDUCATION:

San Diego State University — **San Diego, CA**
Bachelor of Science in Computer Science — **May 2016**
Bachelor of Arts in International Business with Emphasis in Mandarin — **May 2016**

SKILLS:

- Python; C/C++/C#; Java; Swift; Perl; HTML; CSS; JavaScript; SQL
- Microsoft Office Suite; Adobe Creative Suite; Windows XP/Vista/7/8/10; Unix; Linux; Mac OS X
- Virtualization: VMWare; Parallels; Bridged vs. Host-Only Network; Backup/Transfer of Virtual Machine
- Security: Types of Threats; Attack Methodologies: Man in the Middle, Fizzing, DDOS; Defense Methodologies: Defense in Depth
- Image Processing: OpenCV (HSV Filtering, Contour Analysis, Shape & Object Detection, Pattern Recognition)
- Embedded Systems: Serial Communication (UART, RS232); PIC24 MPLAB
- Control Systems: Linear/Nonlinear Analysis; Linearization; Kalman Filter; PIDs
- Mobile App Development: iOS 8 (Swift); Web Development: Django, MySQL, AngularJS, HTTP Requests (GET/POST)
- Unity; Tkinter; Microsoft Visual Studios; XCode; Android Studio; SolidWorks (CAD); Git; Subversion; Eclipse; Keil µVision5; IAR Embedded Workbench
- Unix Shell; Threading; Multiprocessing; TCP/IP; Operating System Design; Linear Algebra; Transformation Matrices; Agile Development (XP, SCRUM)
- Experience with ARM/CORTEX processor boards and microcontrollers
- Strong communication skills, verbal and written
- Languages: Chinese (Mandarin); Spanish; English
- Black Belt (Taekwondo)

EXPERIENCE:

empowr - San Diego, CA | June 2016 - Present
Lead Software Developer/Lead Mobile Developer

- Developed fraud detection engine that detects cycles in a map of nodes (userbase).
- Full stack engineer – responsible for maintaining front end and back end components (front-end: C#, JavaScript, CSS, HTML; back-end: TSQL on ASP.NET).
- Develop engines and business entities to access and cache data at the data access level and apply high level logic, such as rate limiting, with C# thread safe consumer/producer engine logic.
- Developed mobile applications for both Android and iOS using Xamarin Studios using C# (10,000-60,000 users per application).

Mechatronics Club SDSU - San Diego, CA | January 2015 - Present
Software Team Captain

- Lead software developer of San Diego State University's Mechatronics Robotics Club that won *1st place out of 38 international teams* in the International RoboSub competition.
- Mentor to other students while developing image processing and embedded code for both RoboAir and RoboSub divisions.
- Contributed to the main GUI that operates the submarine/AUV, writing a Communication tab to interface with daughter boards using Python, Tkinter, and UART (TX/RX) Serial communication.
- Designed new software elements such as image recognition, shape recognition, socket encoding and transfer of .JPG/.BMP files, and video and device-to-device communication for the GUI that operates RoboAir's UAV.

Apple Inc. - San Diego, CA | May 2013 – January 2014
CPU Advisor

- Troubleshooting of OS X devices includes data transfer, password recovery, driver issues, boot issues, and Wi-Fi/Bluetooth problems.
- Passed internship certification program for software, hardware, and network components troubleshooting.

PROJECTS:

Attack Lab – challenge to gain root access on various systems in a live environment using Kali Linux virtual machine:

- Hardened Kali Linux VM using apt-get to install packages and locking down any unwanted open ports.
- Probed ports of systems using telnet to assess services running on ports and begin to open up the attack surface.
- Accessed port services launching brute force attack with shell script to guess username and passwords of accounts.
- Researched and launched exploits in live time using Metasploit as the main research database.

Swift iOS Mobile Wallet:

- Developed asynchronous REST API (with PromiseKit on app side), deployed on AWS Ubuntu Linux instance with Apache.
- Integrated Uphold finance API, able to transfer and send money in 38 different currencies.
- Utilized MVC (model, view, controller) architecture to encapsulate various sections of the applications and follow iOS standards.

- Website: http://www.youpei.me/

4 Degree of Freedom (4DOF) underwater robotic arm for AUV:

- Created DH table for home configuration of claw and derived forward and inverse kinematics.
- Implemented transformation matrices and linear algebra to determine where the claw should grab an object.
- Calibrated camera matrix using OpenCV to use only a single camera to obtain depth given width and height of object.
- Designed End Effector (EE) in Solidworks (CAD) and water jetted from 6061 aluminum.
- Experimented with novel gripper materials such as silicon, neoprene rubber foam, in order to design a lightweight claw.

Designed software for the UAV to process images, send live .JPG/.BMP images to the ground station, and control onboard servos:

- Created the RoboAir Graphical User Interface (GUI) from scratch using Python and Tkinter.
- Designed image processing techniques to segment images, detect contours, and detect shapes using OpenCV.
- Wrote encoding module to transfer .JPG and .BMP files over socket connection to the ground station via bytestream.

GITS – Graffiti Incident Tracking System, a Django powered MYSQL online website database and offline graphical user interface (GUI):

- Created online information portal with user account login system for the submission of graffiti incidents by cleanup crew.
- Designed MYSQL database behind the web portal to store incident information separate classes for law enforcement and crew.
- Wrote front-end code using Django HTML, CSS, AngularJS, and the MVC (model, view, controller) architecture.
- Implemented socket connection to transfer information from online database to offline GUI made with Python and Tkinter.
- Designed graphing system with Python and Matplotlib to show incidents based on their GPS coordinates.