

Melanie Kwon, MSCS

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LANGUAGES

ADVANCED: Python, Javascript (ES6, Typescript), Java
INTERMED: SQL, CSS, VBA
BASIC: C++, R, Haskell

SKILLS

SOFTWARE DEVELOPMENT

Git, TDD, UNIX CLI, Basic Linux server administration (SSH), Familiar with AWS services (EC2, S3), Docker

FULL-STACK WEB AND MOBILE APP DEVELOPMENT

FRONT-END: Bootstrap, JQuery, AJAX, Sass, Angular
BACK-END: NodeJS, Express, MongoDB,
MS SQL Server, MySQL, PostgreSQL
TOOLS: NPM scripts, Grunt, Webpack
TESTING: Mocha, Jasmine, Karma, Protractor
MOBILE: Android, Ionic/Cordova, Nativescript

EXPERIENCE

DATA SCIENCE RESEARCH LAB – CSULA

Los Angeles, CA

Research Project Manager / Python Developer

May 2017 - Present

- Plan, lead, and coordinate an original, collaborative study with pathologists of LAC+USC/Keck Hospital to assess the diagnostic accuracy of convolutional neural networks trained on whole slide scanned cytology images.
- Engineered a data processing pipeline with Numpy, Pandas, OpenCV & OpenSlide APIs to pre-process large-scale Gigapixel pathology specimen images (100,000 x 300,000 pixels) for machine learning analysis.
- Trained a multi-class, custom object detector to detect abnormal/dysplastic cells using Tensorflow Object Detection API.

KAISER PERMANENTE – DEPARTMENT OF RESEARCH AND EVALUATION

Pasadena, CA

Operations Analyst / Programmer

Aug 2015 - Sept 2017

- Experience in Microsoft BI stack (SSRS reports, ETL with SSIS, writing stored procedures/views in MS SQL Server).
- Automated business intelligence reports in VBA/Excel/Access (Space Management, Grant Projection Tool).
- Provide Lean Six Sigma process improvements and operational/project support for study staff and research scientists.

MERCURY INSURANCE GROUP

Brea, CA

Business Systems Analyst

Jan 2015 – Aug 2015

- Liaison between business and project team to translate business requirements to functional requirements for developers.
- Review requirements with QA, send UAT Approval requests, facilitate meetings to assess scope, gather estimates, determine dependencies to coordinate integration, and check project status to meet multiple upcoming deadlines.

WOMEN IN COMPUTING

Long Beach, CA

Front-End Developer

Jan 2013 – Dec 2014

- Front-end development in HTML5, CSS3, JQuery, and WordPress CMS. Modified custom PHP plugins using Plugin API.
- Organize and lead web development training workshops for CSULB computer science undergraduate students.

CHILDRENS HOSPITAL LOS ANGELES

Los Angeles, CA

Project Coordinator

Mar 2011 – Oct 2012

- Plan/coordinate logistics for hospital-wide education and training workshops for over 4000 CHLA employees, USC faculty, and PMG staff. Streamlined onboarding procedures and facilitated monthly new hire and new manager orientations.

UCLA ANDERSON SCHOOL OF EXECUTIVE EDUCATION

Los Angeles, CA

Program Management Intern

Sept 2008 – Jun 2010

- Provide administrative and project support for executive education staff. Query and analyze program evaluations with Salesforce data for the department's market research needs (analysis via Excel pivot tables, INDEX/MATCH formula).

DATA SCIENCE / MACHINE LEARNING

Excel, Numpy, Pandas, TensorFlow/Keras, Scikit-Learn (*Clustering, Classification, Regression, SVM, Decision Trees, Ensemble Learning/Random Forests, Dimensionality Reduction, ANNs*)

COMMUNITY INVOLVEMENT

Volunteer – SoCal Data Science Conference 2017
Member – Association for Computing Machinery

EDUCATION

M.S., Computer Science, CSULA, pending Spring 2018

B.A., Political Science, UCLA, 2010

Deep Learning Specialization from deeplearning.ai

- [Neural Networks and Deep Learning](#)
- [Hyperparameter tuning, Regularization & Optimization](#)
- [Structuring Machine Learning Projects](#)
- [Convolutional Neural Networks](#)

[Big Data for Data Engineers Specialization](#) (ongoing)

[Data Engineering on Google Cloud Platform](#) (ongoing)

PROJECTS

FULL STACK WEB AND MOBILE APPLICATION DEVELOPMENT

K Star Café – Full stack web & mobile applications featuring a café/restaurant. All written in Javascript.

- **K-Star-Cafe-Angular:** **Single-page Application** using Typescript and **Angular** framework (Ver 4.x). Responsive UI design in **Angular Material** and **Angular Flex-Layout**. Demonstrates use of Observables, reactive programming with **RxJS**, and **Restangular** for communicating with a server supporting REST API.
- **K-Star-Cafe-IonicCordova:** **Hybrid mobile application** using **Ionic** framework (Ver 3.x) and **Cordova** hybrid application framework to target multiple mobile platforms with a single codebase. Features push notifications, sending emails and calls, and social media sharing.
- **K-Star-Cafe-Nativescript:** Cross-platform, **native iOS and Android app** built with **NativeScript** (Ver 3.x). Features a truly native mobile UI feel, animations, gestures, and performance. Supports offline storage with **SQLite** and **Couchbase**.
- **K-Star-Cafe-RESTAPI:** Full-fledged back-end **RESTful API** server developed using **NodeJS**, **Express**, **MongoDB** and **Mongoose**. Token-based **user authentication** with Passport-JWT. Includes **HTTPS** secure communication, form-based file upload with Multer, Cross-Origin Resource Sharing (CORS) and **OAuth2** for authentication via Facebook credentials.

DATA SCIENCE / MACHINE LEARNING

Cervical Cytology Image Classification Using Convolutional Neural Network [Scikit-Image, Caffe]

- **Dataset:** Aggregated from 3 sources - Herlev pap smear database, International Agency for Research on Cancer, Bethesda System for Reporting Cervical Cytology 3E. 1620 images labeled into 3 classes according to cellular dysplasia/abnormality.
- Developed a single-label, 3-class classification model trained from scratch on AlexNet architecture.

Breast Cancer Risk Analysis [Numpy, Pandas, Scikit-Learn]

- **Dataset:** Breast Cancer Wisconsin Data Set (original). 699 data points which include nine characteristics of a minimally invasive fine needle biopsy, including clump thickness, uniformity of cell size, adhesions, etc.
- Trained predictive models using Adaboost and Random Forest classifiers to determine patients' cancer risk.

Eigenfaces – Facial Recognition Algorithm Using Non-Linear SVM [Numpy, Pandas, Scikit-Learn]

- **Dataset:** Olivetti database from AT&T research lab. 400 face images from 40 people (10 images per person).
- Computed Principal Components Analysis using unsupervised feature extraction / dimensionality reduction. Trained a non-linear Support Vector Machine classification model.

Heart Disease Prediction – Data Extraction, Artificial Neural Network [BeautifulSoup, Scikit-Learn]

- **Dataset:** Aggregated databases of heart disease diagnoses collected from four different medical centers.
- Parse features from web page and pre-process/clean data using regular expressions. Used PCA to reduce dimensionality of the data and trained artificial neural network classifier to predict patients' likelihood of heart disease.

Predicting Median House Values In Boston – Scalar Regression [Numpy, Keras/Tensorflow]

- **Dataset:** Boston housing dataset from mid-1970s with only 506 data points about area's crime rate, local property tax, etc.
- Prepared data with feature-wise normalization, defined/trained two layer artificial neural network model and evaluated model using K-fold cross-validation.

Car Detection For Autonomous Driving – YOLOv2 [Numpy, PIL, Keras/Tensorflow]

- **Dataset:** Drive.ai sample dataset, pictures taken from a camera on the streets of Silicon Valley.
- Utilized a pre-trained Keras YOLOv2 model to engineer a car detector for street camera videos. Draws bounding box and predicted confidence scores around detected vehicles.

Email Marketing Cluster Analysis For Customer Base Segmentation [Excel, K-Means Clustering]

- **Dataset:** WineKMC.xlsx from wiley.com/go/datasmart. Two sources: Metadata of each product offering, transactions log.
- Employed cluster analysis to create market segmentation for targeted email marketing.

Reuters News – Multi-Class Text Classification [Numpy, Keras/Tensorflow]

- **Dataset:** Reuters dataset, a set of short newswires and their topics published in 1986.
- Built predictive model to classify articles of text into one of 46 topics. Use one-hot encoding to vectorize the text data for input and define and train a three layer artificial neural network model.

WRITING

D.I.Y. Jupyter Notebook Server – Tutorial that provides step by step instructions on how to set up your own Jupyter Notebook server on a home computer and remotely access it via SSH.