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## **EDUCATION**

# University of Southern California

Ph.D. in Neuroscience

Los Angeles, CA Jul. 2011 – Aug. 2017

Tsinghua University

Bachelor of Science in Physics

Beijing, China Jul. 2007 – Jul. 2011

## SKILLS

• Theories: Machine Learning, Statistics, Control Theory, Deep Learning, Scientific Computing

• Languages: Python, R, Matlab, SQL, Java, Mathematica

• Technologies: Git, MySQL, TensorFlow, Spark, Kinect, CKAN

## WORK EXPERIENCE

## Innovation Solutions

Santa Ana, CA

Software Engineer Intern

Summer 2015 & Spring 2016

- Summary: Developed applications to record, analyze and report human movement kinematics and performance during Kinect video games and exercises.
- Data Acquisition: Implemented an application body-recorder to acquire Kinect skeleton data and smooth it with an Unscented Kalman Filter (Matlab & C#). ~ 90% of noise and spikes are filtered out.
- Data Analysis: Implemented an application to calculate human anatomical joint angles from Kinect skeleton data (Matlab & C#), allowing further analysis of human movement patterns in anatomical terms.
- Report and Visualization: Designed and implemented a web application to report full kinematics performance history to users and physical therapists (R, Shiny & SQL) with intuitive graphics.

#### SixThirty Incubator

Pasadena, CA

Data Scientist

Jul 2015 - Aug 2016

• **CKAN**: Set up CKAN Open Source Data Portal Platform in Linux environment; Deployed the platform onto AWS Cloud and Google Cloud, enabling SixThirty to publish and share datasets.

## RESEARCH PROJECTS

#### • Human Movement Analysis::

- Movement Planning: Simulated human arm movement in state space via Optimal Control Theory implemented by iterative Linear-Quadratic Regulator and Dynamic Programming in Matlab; Showed that a moderate movement velocity achieves the best accuracy.
- Movement Learning: Analyzed 10+GB upper extremity kinematics data via Matlab, R and SQL; Extracted movement patterns and variability patterns via PCA and other dimension reduction methods; Unraveled the relationship between movement patterns and movement learning.
- Movement Learning Prediction: Developed dynamical State Space Model with Mixed Effects to investigate the effects of rehabilitation training, allowing customization of training schedule and prediction of future performance for each individual.
- Customer Churn Prediction: Developed regression, tree-based and KNN algorithms to predict customer churn probability based on labeled data via Python and Spark. Achieved more than 90% accuracy.
- Word Prediction: Developed an application wordpred to predict the most likely following word in real time while a user is typing. Tokenized 2GB text data to train an ngram model. Deployed via Shiny framework.

#### Publications

- Wang C et al. Spin-orbit coupled spinor Bose-Einstein condensates. Physical Review Letters. 105, 160403
- Wang C et al. The duration of reaching movement is longer than predicted by minimum variance. *Journal of Neurophysiology*. Vol.116 no.5, 2342-2345
- Martinez C, Wang C. Structural constraints on learning in the Neural Network. *Journal of Neurophysiology*. Vol.114 no.5, 2555-2557