LAE Chung Khim

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EMPLOYMENT

Consulting Jan 2014 – Dec 2019

- Built an early detection app that analysed data from Google Trends, online news articles, the stock market and financial reports to monitor credit risk and flag for distress signals in existing business clients.
- Advised a cancer research company on setting up GPU servers for deep learning and visualizing multi-dimensional medical data.
- Improved the AI of a bot to arrange meetings by text mining geolocation data from emails.
- Set up, developed and maintained a professional website for a fintech start-up.
- Built a web application for Infocomm Development Authority of Singapore (IDA) to collect and analyse diabetes-related data which was showcased at a Smart Nation conference in Oct 2014.

Teaching Jan 2015 – Dec 2019

- Mathematics instructor conducting lessons online via Zoom and in classroom to working adults at Singapore University of Social Sciences for one semester.
- Taught web development (Bootstrap, AngularJS, JSON) to students in secondary schools such that they could build web applications on their own at the end of the course.
- Volunteered as a mentor for IDA to conduct review lessons for working adults taking the online Data Science Specialization program.

Visiting Scientist, Bioinformatics Institute of A*STAR Jul 2012 – Dec 2012

- Guided a student on his honours thesis and interacted with the Computer Vision and Pattern Discovery for Bioimages group.
- Built a neural network in MATLAB to detect prostate cancer from biopsy images to assist pathologists in their work.

Postdoctoral Researcher, CMS Experiment Aug 2006 – Aug 2010

- Built the data analysis pipeline from collection to cleaning to modelling to visualization at European Organization for Nuclear Research (CERN).
- Process automation and parallelization in C++/Linux to reduce running time by tenfold.
- Gathered requirements from other teams to successfully build an integrated database using SQL for real-time data acquisition in a robust, scalable manner.

Research Assistant, BaBar Experiment Dec 2001 – Jun 2006

- Using statistical modelling and machine learning to mine huge data from Stanford Linear Accelerator Center (SLAC) for rare signals to discover new insights about the universe.
- To overcome bottlenecks in data processing, I created fast, efficient and user-friendly tools for every group in the collaboration to analyse and visualize data at scale.
- Monitored the data quality through anomaly detection of multiple variables during data processing.

Graduate Intern, NASA Goddard Space Flight Center Jun 2000 – Aug 2000

Simulated the rotation of a pulsar as seen by an observer on Earth using Fortran 90/95 and the resulting light curve was displayed.

Teaching Assistant, University of Maryland College Park Aug 1998 – Aug 2001

Administrated and taught Physics (including grading and practicals) to students from physics, engineering, and medical departments.

EDUCATION

University of Maryland at College Park, USA

- Doctor of Philosophy, Physics, 2006.

National University of Singapore

- Bachelor of Science, Physics and Mathematics, 1997.
- Minor in Computer Programming and Application.
- Science Faculty Dean's List in 1995, 1996 and 1997.
- Book Prize for being one of the top two students in the First Examination of 1994/95.
- Scholarships Awards for Academic Excellence in 1996 and 1997.

EXPERTISE

Programming: C/C++, Java, Python, Tcl/Tk, SQL, R, MATLAB, VBA.

Web Development: HTML5, CSS, JavaScript.

Database: Oracle, MySQL, MongoDB.

Linux: Git, Bash, SSH.

Windows: Microsoft Office, Remote Desktop Connection, Tableau.

Cloud/HPC: AWS, GCP, LSF, PBS.

Knowledge: algorithms, data structures, database management, design patterns, OOP.

Machine Learning: recommender systems, anomaly detection, clustering, PCA, SVM, neural network, boosting, random forest.

Statistics: regression, maximum likelihood, hypothesis testing, ANOVA, Bayesian.

PRESENTATIONS

1. Boosted Decision Trees and Random Forests for Correlated, High-Dimensional Data Analysis, invitation by Bioinformatics Institute, 2012
2. HIP Alignment with Survey Constraints, CMS Alignment: Survey and First Geometry Workshop, 2007.
3. Survey DB Object and Framework, CMS Alignment: Survey and First Geometry Workshop, 2007.
4. Use of Survey Information in HIP, Tracker Alignment Workshop in Hamburg, 2007.
5. A Study of Time-Dependent CP-Violating Asymmetry in $B^0 \to D^{*+}D^{*-}$, American Physical Society Meeting, 2003.

SELECTED PUBLICATIONS

1. Alignment of the CMS Silicon Tracker during Commissioning with Cosmic Rays, Journal of Instrumentation **5** (2010).
2. Alignment of the CMS Silicon Strip Tracker during stand-alone Commissioning, Journal of Instrumentation **4** (2009).
3. Measurement of Branching Fractions and CP-violating Charge Asymmetries for B Mesons Decays to $D^{(*)}D^{(*)}$, and Implications for the CKM Angle γ, Physical Review D **73** (2006).
4. Measurement of Time-Dependent CP Asymmetries and the CP-Odd Fraction in the Decay $B^0 \to D^{*+}D^{*-}$, Physical Review Letters **95** (2005).
5. Measurement of Time-Dependent CP Asymmetries in $B^0 \to D^{(*)\pm}D^{\mp}$ Decays, Physical Review Letters **95** (2005).
6. Search for the W-exchange decays $B^0 \to D_s^{(*)-}D_s^{(*)+}$, Physical Review D **72** (2005).
7. Measurement of Time-Dependent CP Asymmetries and the CP-Odd Fraction in the Decay $B^0 \to D^{*+}D^{*-}$, Physical Review Letters **91** (2003).

(For all papers, please refer to https://inspirehep.net/authors/1028366.)