Chayut Wongkamthong

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Education

Duke University *NC, USA*

M.S. DATA SCIENCE *Aug. 2019 – May 2021*

- GPA: 3.97
- Awarded Duke Scholarship from the Social Science Research Institute (SSRI), Duke University

Chulalongkorn University *Bangkok, Thailand*

BACHELOR OF ENGINEERING *May 2011 - Jun. 2015*

- Graduated with First Class Honors and Medal of Excellence; GPA: 4.00
- Awarded Bhumibol Scholarship from HM King Rama IX

Skills and Interests

Research Areas: Bayesian statistics**,** Missing data, Statistical machine learning, Numerical optimization
Programming: Python, R, MATLAB, SQL, NoSQL, Hadoop, VBA, Basics of Java
Coursework: Bayesian Statistics, Real Analysis, Linear Algebra, Machine Learning, Statistical Modelling, Differential Equation, Multivariable Calculus, Algorithm Theories, Numerical Optimization
Data Science: Bayesian Nonparametric Models (GP, DP), ML, Deep Learning, Numerical Optimization
Certificates: **IBM** Data Science Professional Certificate, **Deeplearning.ai** Deep Learning Specialization

Experience

Social Science Research Institute (SSRI), Duke University *NC, USA*

RESEARCH ASSISTANT *Jan. 2020 - PRESENT*

- **Supervisor:** Olanrewaju M. Akande (SSRI and Statistical Science, Duke University)
- **Research Topics**: Bayesian nonparametric methods for missing data imputation, Dirichlet process mixture models

Electrical and Computer Engineering (ECE), Duke University *NC, USA*

RESEARCH ASSISTANT *Jan. 2020 - PRESENT*

- **Supervisor:** Vahid Tarokh (ECE, Duke University), Ali Pezeshki (ECE, Colorado State University)
- **Research Topics**: Radar signal processing, Statistical methods for object detection, Cluster analysis

PTT Exploration and Production Public Company Limited (PTTEP) *Bangkok, Thailand*

PETROLEUM ENGINEER *Jul. 2015 - Aug. 2019*

- **Technical Leader (Joint Ventures) with Chevron** (2018): Supervised B8/32 oil field in the Gulf of Thailand
- **Researcher** (2017): Implemented reservoir simulation (mathematical models to forecast production)
- **Reservoir Engineer** (2016): Optimized gas production in Arthit gas field (220 MMcf of gas production per day)

Research projects

Hierarchical Dirichlet Process Mixture of Multinomial Distributions Model *Oct. 2020 - PRESENT*

- Develop a nonparametric Bayesian mixed membership method using hierarchical Dirichlet process prior.
- Derive its Gibbs sampling scheme; Show an application in social science in survey containing missing data.

Data-Driven Improved Radar Object Detection *Jan. 2020 - PRESENT*

- Develop statistical methods (Cluster analysis) for clutter representation and cancellation from radar signals.
- Develop algorithms for data-driven radar object detection and compare them with radar engineering methods.
- Collaborate with Air Force Research Laboratory; wrote the proposal for a research grant from the US Air Force.
- Wrote and published the manuscript regarding the radar clutter representation to the 2021 IEEE Radar Conference.

Hierarchical Gaussian Process Model for Predicting Microbial Growth *Aug. 2020 – May 2021*

- Collaborated with the Schmid Lab, Duke; applied HGP regression for microbial growth under stress; designed GUI.

Statistical and Machine Learning Methods for Imputing Ordinal Data *Jan. 2020 - Nov. 2020*

- Analyzed missing data imputation methods (Dirichlet process mixture models, MICE) for ordinal variables.
- Performed statistical inference and evaluated distributional characteristics of imputed values.
- Wrote and published the manuscript for the Journal of Survey Statistics and Methodology (JSSAM).

Production Optimization Software: The Field State Model *Jan. 2018 - Oct. 2018*

- Innovated a software to formulate the petroleum production system into a solvable convex optimization problem.
- Cooperated with asset managers; achieved over $640,000 gain in petroleum production in 2018.
- Published the manuscript and presented it at 2018 Asia Pacific Oil and Gas Conference and Exhibition, Australia.

Slimhole Repeat Formation Tester (SRFT) Successfulness Predictor *Nov. 2017 - Jul. 2018*

- Led a team of 5; identified reservoir parameters associated with the probability of success of SRFT operation.
- Optimized classifiers (GLMs, SVM, Boosting); reduced failure rate by 30%; saved $120,000 from downtime.

Statistical Model for Reservoir Sonic Property *Oct. 2016 - Apr. 2017*

- Discovered high cost/constraints of obtaining sonic property of reservoirs, a key indicator of reservoir quality.
- Developed statistical models (GLMs, ridge regression) to infer sonic property; saved $500,000 data acquisition cost.

Publications

A Comparative Study of Imputation Methods for Multivariate Ordinal Data *NC, USA*

Wongkamthong, C. & Akande, O. (2021), 'A Comparative Study of Imputation Methods for Multivariate Ordinal Data', Journal of Survey Statistics and Methodology. doi: smab028.

Knowledge-Aided Data-Driven Radar Clutter Representation *NC, USA*

Feng, Y., Wongkamthong, C., Soltani, M., Ng, Y., Gogineni, S., Kang, B., Pezeshki, A., Calderbank, R., Rangaswamy, M. & Tarokh, V. (2021), Knowledge-Aided Data-Driven Radar Clutter Representation, in 2021 IEEE Radar Conference (RadarConf21), pp. 1–4. doi: 10.1109/RadarConf2147009.2021.9455318.

Software Development for Gas Production Optimization *Brisbane, Australia*

PRESENTER FOR SPE ASIA PACIFIC OIL & GAS CONFERENCE AND EXHIBITION 2018 *Oct. 2018*

Wongkamthong, C., Wongpattananukul, K., Suranetinai, C., Vongsinudom, V. & Ekkawong, P. (2018), In-House Software Development for Gas Production Optimization: A South East Asia Perspective, Paper presented at the SPE Asia Pacific Oil and Gas Conference and Exhibition, Brisbane, Australia , October 2018. doi: 10.2118/192080-MS.