

# Ye Zhu

Homepage: <https://www.deakin.edu.au/about-deakin/people/ye-zhu>

Google Scholar: <https://scholar.google.com/citations?user=QxRHA48AAAAJ&hl>

Email : [ye.zhu@deakin.edu.au](mailto:ye.zhu@deakin.edu.au)

Tel: +61 3 924 68039

## RESEARCH INTERESTS

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- **Clustering:** Density-Based Clustering, High-Dimensional/Subspace Clustering, Hierarchical Clustering
- **Similarity Learning:** Distance Scaling, Feature Transformation, Data-Dependent Similarity Measure
- **Anomaly Detection:** Density-Based Anomaly Detection, Isolation-Based Anomaly Detection

## EDUCATION

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- **Monash University** Clayton, Australia  
*Doctor of Philosophy in Artificial Intelligence (Data Mining and Machine Learning)* Nov. 2013 – May 2017  
Thesis: Efficient Identification of Arbitrarily Shaped and Varied Density Clusters in High-dimensional Data  
Supervisors: Prof. Kai Ming Ting and A/Prof. Mark Carman  
Awarded the 2018 **Mollie Holman Doctoral Medal**
- **Imperial College London** London, United Kingdom  
*Master of Science in Computing (Computational Management Science)* Oct. 2011 – Oct. 2012  
Thesis: Growth-Optimal Portfolio Selection  
Supervisor: Prof. Daniel Kuhn
- **Central China Normal University** Wuhan, China  
*Bachelor of Engineering in Computer Science* Sep. 2006 – June 2010

## WORKING EXPERIENCE

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- **Deakin University** Burwood, Australia  
*Lecturer in Information Technology (Tenured Level B Academic)* Feb. 2019 - Present  
*Research Fellow in Complex System Data Analytics (Level B Academic)* July 2017 - Feb. 2019
  - **Research Activities:**
    - \* Initiating and conducting research with several researchers in the area of complex systems data analytics, such as telecare call centre data, mobile game data and sleep laboratory data.
    - \* Supervising PhD students with Prof. Maia Angelova, Prof. Yong Xiang and A/Prof. Jianxin Li.
  - **Teaching Activities:**
    - \* SIT718 – Real World Analytics
    - \* SIT741 – Statistical Data Analysis
    - \* SIT742 – Modern Data Science
- **Monash University** Clayton, Australia  
*Teaching Associate* Feb. 2016 - Present
  - **Teaching Activities:**
    - \* FIT5145 – Introduction to data science
    - \* FIT5147 – Data exploration and visualisation
    - \* FIT5196 – Data wrangling
    - \* FIT9133 – Programming foundations in python
    - \* FIT2017 – Computer models for business decision making
- **Federation University Australia** Churchill, Australia  
*Research Assistant* Apr. 2015 - May 2017
  - **Mass Estimation Project:** Worked with my PhD supervisor Prof. Kai Ming Ting in several research projects about mass estimation funded by US Air Force Research Laboratory.
- **PricewaterhouseCoopers** Beijing, China  
*IT Business Consultant* Feb. 2013 - Nov. 2013

- **Business Intelligence and Data Warehousing:** Provided advice on management of information, as a strategic business resource, to ensure that the information needs of the business are met for a large national bank in China. Encompassed development and promotion of enterprise data models, metadata design and implementation business intelligence repositories, master data management and the selection and implementation of tools to support data governance for the next generation data warehouse.

## FUNDED PROJECTS

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- **AUD\$30,000** Multi-layer adversarial decision making networks - 2020
- **AUD\$28,203** Adversarial decision making networks and directed fires with non-combatant populations - 2019
- **AUD\$50,000** Intelligent Sensor processing for Enhancing Defence Decision Support - 2019
- **AUD\$12,778** Multiple networks in dynamical combat modelling and critical phenomena - 2018

## HONORS AND AWARDS

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- **Mollie Holman Medal** Monash University, Australia  
*Awarded to the best PhD thesis of the year* *May 2018*
- **Postgraduate Publications Award** Monash University, Australia  
*For publishing components from PhD thesis in journals* *Feb. 2017*
- **SIGKDD/KDD'16 Student Travel Grant** ACM, USA  
*Grant for travelling to KDD'16 conference* *July 2016*
- **Faculty of IT International Research Scholarship** Monash University, Australia  
*Scholarship for doctoral study* *Nov. 2013 - Feb. 2017*
- **Excellent Graduate Award** Central China Normal University, China  
*Academic honour for outstanding graduates* *June 2010*

## PROFESSIONAL SERVICE

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- **Journal/Conference Reviewer:**  
*Journal Reviewing:*
  - IEEE Transactions on Neural Networks and Learning Systems (2019)
  - Machine Learning (2019, 2017)
  - Data Mining and Knowledge Discovery (2020,2019)
  - Knowledge and Information Systems (2018)
  - IEEE Transactions on Computational Social Systems (2018)
  - IEEE Transactions on Image Processing (2020)
  - International Journal of Data Science and Analytics (2018)
  - Pattern Recognition (2016)
- Conference Reviewing:*
  - PKDD-ECML (2020, 2019)
  - PAKDD (2020, 2019)
  - IEEE International Conference on Data Mining (2016)
  - ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (2016)
- **Conference Organiser/Volunteer:**
  - Pacific-Asia Conference on Knowledge Discovery and Data Mining (Melbourne, Australia – 2018)
  - ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (San Francisco, California, USA – 2016)

## PUBLICATIONS

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- **Journal papers:**

*Published/accepted papers:*

- Maia Angelova, Gleb Beliakov, Sergiy Shelyag, **Ye Zhu**. “Density estimates on the unit simplex and calculation of the mode of a sample.” *International Journal of Intelligent Systems*, 2019.
- Maia Angelova, Gleb Beliakov, **Ye Zhu**. “Density-based clustering using approximate natural neighbours.” *Applied Soft Computing*, 2019.
- Ming Li, Di Xiao, **Ye Zhu**, Yushu Zhang, Lin Sun. “Commutative fragile zero-watermarking and encryption for image integrity protection” *Multimedia Tools and Applications*, 2019
- Moting Su, Zongyi Zhang, **Ye Zhu**, Donglan Zha. “Data-driven natural gas spot price forecasting with least squares regression boosting algorithm.” *Energies*, 2019.
- Moting Su, Zongyi Zhang, **Ye Zhu**, Donglan Zha, Wenyong Wen. “Data Driven Natural Gas Spot Price Prediction Models Using Machine Learning Methods.” *Energies*, 2019.
- Yushu Zhang, Jin Jiang, Yong Xiang, **Ye Zhu**, Liangtian Wan, Xiyuan Xie. “Cloud-Assisted Privacy-Conscious Large-Scale Markowitz Portfolio.” *Information Sciences*, 2019.
- Bo Chen, Kai Ming Ting, Takashi Washio, and **Ye Zhu**. “Local contrast as an effective means to robust clustering against varying densities.” *Machine Learning*, 2019.
- **Ye Zhu**, Kai Ming Ting, and Mark J. Carman. “Grouping Points by Shared Subspaces for Effective Subspace Clustering.” *Pattern Recognition*, 2018.
- Tharindu R. Bandaragoda, Kai Ming Ting, David Albrecht, Fei Tony Liu, **Ye Zhu**, and Jonathan R. Wells. “Isolationbased anomaly detection using nearestneighbor ensembles.” *Computational Intelligence*, 2018.
- Kai Ming Ting, **Ye Zhu**, Mark Carman, Yue Zhu, Takashi Washio, and Zhi-Hua Zhou. “Lowest Probability Mass Neighbour Algorithms: Relaxing the metric constraint in distance-based neighbourhood algorithms.” *Machine Learning*, 2018.
- **Ye Zhu**, Kai Ming Ting, and Mark J. Carman. “Density-ratio based clustering for discovering clusters with varying densities.” *Pattern Recognition*, 2016.
- **Ye Zhu**, and Kai Ming Ting. “Commentary: a decomposition of the outlier detection problem into a set of supervised learning problems.” *Machine Learning*, 2016.

- **Conference papers:**

*Published/accepted papers:*

- Xiaoyu Qin, Kai Ming Ting, **Ye Zhu**, and Vincent Lee. “Nearest-Neighbour-Induced Isolation Similarity and Its Impact on Density-Based Clustering.” In *Proceedings of the Thirty-Third AAAI Conference on Artificial Intelligence (AAAI-19)*, 2019.
- Yuan Jin, Mark Carman, **Ye Zhu**, and Wray Buntine. “Distinguishing Question Subjectivity from Difficulty for Improved Crowdsourcing.” In *Proceedings of the 10th Asian Conference on Machine Learning (ACML)*, 2018.
- **Ye Zhu**, Kai Ming Ting, and Maia Angelova. “A Distance Scaling Method to Improve Density-based Clustering.” In *Proceedings of the 22nd Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD)*, 2018.
- Yuan Jin, Lan Du, **Ye Zhu**, and Mark Carman. “Leveraging Label Category Relationships in Multi-class Crowdsourcing.” In *Proceedings of the 22nd Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD)*, 2018.
- Kai Ming Ting, **Ye Zhu**, Mark Carman, Yue Zhu, and Zhi-Hua Zhou. “Overcoming key weaknesses of distance-based neighbourhood methods using a data dependent dissimilarity measure.” In *Proceedings of the 22nd ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD)*, 2016.