

# Yingyi Chen

KU Leuven  
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## Education

- 2019–present **Ph.D. candidate in Engineering Science**, KU Leuven, Leuven, Belgium.  
Supervisor: *Prof. dr. ir. Johan A.K. Suykens*  
Jury: *Toon van Waterschoot, Jos De Brabanter, Lynn Houthuys, and Julien Mairal.*  
Research: *Deep Learning and Machine Learning*: learning with noisy label, self-supervised learning, kernel methods in Transformers, Gaussian Processes for uncertainty estimation in Transformers ([Doctoral Defence will be held in May 21, 2024](#)).
- 2016–2019 **Ph.D. candidate in Statistics**, Renmin University of China, Beijing, China.  
Supervisor: *Prof. dr. Chunrong Ai*  
Research: Statistics, Statistical learning theory
- 2012–2016 **B.S. in Statistics**, Huazhong University of Science and Technology, Wuhan, China.

## Awards and Honors

- 2023 Recipient of **Research Travel Grant** from KU Leuven.
- 2016–2018 Recipient of **Academic Scholarship** from Renmin University of China.
- 2013–2015 Recipient of **Premium Student of Qiming College** (top 1%) of Huazhong University of Science and Technology.
- 2013–2015 Recipient of **First-Class Scholarship** (top 5%) from Huazhong University of Science and Technology.
- 2014 Recipient of **National Scholarship** (top 0.2%, highest honor) from Ministry of Education of P.R. China.

## Teaching Activities

### Teaching Assistant of Graduate Courses

- 2020–present **Teaching Assistant**, *Support Vector Machines: Methods and Applications [H00H3a]*.  
Weekly computer lab exercises, assign and mark homework.
- 2019–present **Teaching Assistant**, *Data Mining and Neural Networks [H05R4a]*.  
Weekly computer lab exercises, assign and mark homework.

### Daily Supervisor of Master Theses in Mathematical Engineering

- 2023–2024 Object Detection through Multi-view Kernel Spectral Clustering Analysis, by Arno Waes, *ongoing*, KU Leuven.
- 2022–2023 Combating Label Noise with Learnable Principal Component Analysis, by Alessia Denti, *Erasmus+ EU programme for education, training, youth and sport*, European Commission.
- 2020–2021 Bernoulli Random Density Forest, by Iker Camara Bengoechea, *Cum Laude Graduation Award*, KU Leuven.
- 2019–2020 Random Support Vector Trees: Towards Reconciling Random Forests in Theory and Practice, by Vincent Buekers, *Cum Laude Graduation Award*, KU Leuven.

## Academic Services

### Journal Reviewer

- 2020–present IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), IEEE Transactions on Neural Networks and Learning Systems (TNNLS), Neural Networks, Pattern Recognition Letters (PRL), Multimedia Systems

### Organization of Scientific Events

- 2023 Co-organizer of Rethinking Transformers through Duality and New Directions Workshop, Leuven.AI junior researchers day.

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## Open-Source Software

- Primal-Attention I'm the main author of the open-source Primal-Attention package, where we provide a new perspective to represent and optimize self-attention through asymmetric Kernel Singular Value Decomposition (KSVD), which is also motivated by the low-rank property of self-attention normally observed in deep layers.
- Jigsaw-ViT I'm the main author of the open-source Jigsaw-ViT package, where we explore solving jigsaw puzzle as a self-supervised auxiliary loss in vision transformers (ViTs), obtaining better generalization properties and robustness for image classification.
- NCT I'm the main author of the open-source Nested Co-teaching (NCT) package, a new method that provides state-of-the-art performances for convolutional neural networks to conduct robust learning against label noise for image classification.

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## Computer Skills

- Programming Python (PyTorch), MATLAB, R, HTML, LaTeX, MS Office. See my released codes on GitHub.

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## List of Publications

### Journal Articles

- 2023 **Yingyi Chen**, Xi Shen, Yahui Liu, Qinghua Tao, and Johan A.K. Suykens. Jigsaw-vit: Learning jigsaw puzzles in vision transformer. *Pattern Recognition Letters (PRL)*, volume 166, pages 53–60. Elsevier, 2023.
- 2022 **Yingyi Chen**, Shell Xu Hu, Xi Shen, Chunrong Ai, and Johan A.K. Suykens. Compressing features for learning with noisy labels. *IEEE Transactions on Neural Networks and Learning Systems (TNNLS)*. IEEE, 2022.

### Conference Proceedings

- 2024 **Yingyi Chen\***, Qinghua Tao\*, Francesco Tonin, and Johan A.K. Suykens. Self-attention through kernel-eigen pair sparse variational gaussian processes. *International Conference on Machine Learning (ICML)*, 2024.
- 2024 Qinghua Tao, Francesco Tonin, Alex Lambert, **Yingyi Chen**, and Johan A.K. Suykens. Learning in feature spaces via coupled covariances: Asymmetric kernel svd and nyström method. *International Conference on Machine Learning (ICML)*, 2024.
- 2024 Yuting Li, **Yingyi Chen**, Xuanlong Yu, Dexiong Chen, and Xi Shen. SURE: SURvey REcipes for building reliable and robust deep networks. *International Conference on Computer Vision and Pattern Recognition (CVPR)*, 2024.
- 2023 **Yingyi Chen\***, Qinghua Tao\*, Francesco Tonin, and Johan A.K. Suykens. Primal-attention: Self-attention through asymmetric kernel SVD in primal representation. *Advances in Neural Information Processing Systems (NeurIPS)*, 2023.
- 2021 **Yingyi Chen**, Xi Shen, Shell Xu Hu, and Johan A.K. Suykens. Boosting co-teaching with compression regularization for label noise. *International Conference on Computer Vision and Pattern Recognition Workshop (CVPR Workshop)*, pages 2688–2692, 2021.
- 2021 Fanghui Liu, Xiaolin Huang, **Yingyi Chen**, and Johan A.K. Suykens. Fast learning in reproducing kernel krein spaces via signed measures. *International Conference on Artificial Intelligence and Statistics (AISTATS)*, pages 388–396, 2021.