

# Derek Wu

Senior Backend Engineer

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🐙 BreezeWhite

🌐 Derek Wu

## Profile

I'm a Senior Backend Engineer with over 5 years of experience in developing diverse systems and applications. I've played a key role in early-stage startups, building products from the ground up.

With a strong understanding of AI technologies, I've successfully led multiple large-scale AI projects, demonstrating my problem-solving skills and adaptability.

I'm currently seeking a Senior Backend Engineer position, ideally in a remote work environment, and I'm open to AI-related opportunities where I can contribute my expertise.

## Experience

12/2022 – 02/2025

### Backend & AI Engineer, *Transferhelper*

- Developed multiple intelligent lending strategies on Bitfinex, yielding a 15% APR over six months.
- Built robust backend services using Kubernetes, PostgreSQL, and Redis on Google Cloud Platform.
- Implemented comprehensive monitoring solutions with Grafana, Prometheus, and Slack integration.
- Orchestrated a CI/CD pipeline utilizing Google Cloud Build, attaining a unit test coverage rate of over 90%.
- Researched and applied advanced AI techniques to convert human photos into 3D models.
- Migrated infrastructure from hosted Kubernetes to virtual machines, resulting in budget savings of up to 53%.

01/2022 – 08/2022

### Backend Engineer, *Pinkoi*

- Led a major upgrade and refactor of an outdated and complex coupon logic system, improving maintainability and performance.
- Collaborated with the finance team to develop a new invoice billboard feature.
- Demonstrated strong ability to quickly diagnose and resolve issues within a large-scale system.

07/2021 – 11/2021

### Backend Engineer, *Meteo Piano*

- Proposed and developed the first fully open-source end-to-end solution for Optical Music Recognition (OMR) problem, published as "*oemer*" on GitHub.
- Integrated existing tools into a distributed RESTful API server within one month..
  - Deployed services on AWS EC2, leveraging S3, VPC, ECS, and Load Balancer..

06/2017 – 12/2020

### Research Assistant, *IIS Academia Sinica*



- Presented two IEEE conference papers and authored one IEEE journal paper, pioneering research on the note-level multi-instrument transcription problem. Consolidated lab research into a unified Python package, *omnizart*, published on GitHub, which has garnered over 1,000 stars.

07/2019 – 06/2020







### Backend Engineer Intern, *TrendMicro*

- Linked the authentication process between the internal ADFS system and AWS services, solving a long-standing cross-team issue within two months.
- Optimized the CI/CD pipeline, reducing runtime by up to 50%.
- Integrated a new Blue/Green deployment strategy on AWS for smoother releases.
- Streamlined deployment scripts for enhanced readability and implemented unit tests to ensure accuracy.
- Translated machine learning code from Python to Java for backend integration.





## Education

- 2018 – 2020     **M.Sc. Computer Science**, National Taiwan Normal University.  
Thesis title: *Multi-Instrument Automatic Music Transcription With Self-Attention-Based Instance Segmentation*.
- 2014 – 2018     **B.Sc. Computer Science**, National Taiwan Normal University.

## Skills



- Languages     Native Mandarin Chinese speaker; strong proficiency in reading and writing English.
- Coding     Python, FastAPI, Rust, asynchronous programming.
- Databases     PostgreSQL, MySQL.
- Infra     Google Cloud Platform (GCP), Amazon Web Services (AWS), Docker, Kubernetes, GitHub, Redis, Nginx, Linux.
- Web Dev     HTML, CSS, JavaScript, Vue.js.
- Misc.     Academic research, machine learning, TensorFlow, PyTorch, scikit-learn, NumPy, OpenCV.

## Research Publications

- 1    **Y. T. Wu**, Y.-J. Luo, T.-P. Chen, *et al.*, “Omnizart: A general toolbox for automatic music transcription,” *Journal of Open Source Software*, vol. 6, no. 68, p. 3391, 2021.  DOI: 10.21105/joss.03391.
- 2    **Y. T. Wu**, B. Chen, and L. Su, “Multi-instrument automatic music transcription with self-attention-based instance segmentation,” *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, vol. 28, pp. 2796–2809, 2020.  DOI: 10.1109/TASLP.2020.3030482.
- 3    **Y. T. Wu**, B. Chen, and L. Su, “Polyphonic music transcription with semantic segmentation,” in *ICASSP 2019 - 2019 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2019, pp. 166–170.  DOI: 10.1109/ICASSP.2019.8682605.
- 4    **Y. T. Wu**, B. Chen, and L. Su, “Automatic music transcription leveraging generalized cepstral features and deep learning,” in *2018 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2018, pp. 401–405.  DOI: 10.1109/ICASSP.2018.8462079.

## Miscellaneous Experience

### Community Engagement

- 2022 – Present     Volunteer of **PyCon TW** - Actively participating in organizing and supporting events for the Python community.
- 2024     One of the podcast host of **PyCast** - Co-hosting a podcast focused on discussions around Python and its ecosystem.