

Derek Wu

Senior Backend Engineer

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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 – Present

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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

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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 - Led a major upgrade and refactor of an outdated and complex coupon logic system, improving maintainability and performance.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

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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



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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







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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.