Naoto Usuyama

Principal Researcher at Microsoft Research

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About

Naoto Usuyama is a Principal Researcher at Microsoft Research in the <u>Health Futures</u> team, where he leads research at the intersection of AI and healthcare, with a focus on large-scale foundation models and multimodal AI.

Naoto led the creation of <u>GigaPath</u>, the first whole-slide pathology foundation model, published in Nature. Developed in collaboration with the Providence Health Network, GigaPath was trained on over one billion diverse pathology images. Within less than a year of its release, it was downloaded over one million times and is now widely used to advance pathology research and clinical applications. He also developed <u>BiomedParse</u>, a universal promptable vision foundation model featured in Nature Methods, and <u>BiomedCLIP</u>, a vision-language model trained with over 15 million biomedical image-text pairs, published in NEJM AI. These efforts have advanced new capabilities in biomedical vision understanding and multimodal AI integration.

His contributions further extend to multimodal language models, including <u>LLaVA-Med</u> for biomedical tasks (NeurIPS) and <u>LLaVA-Rad</u> for radiology report generation (Nature Communications). He also introduced <u>Medprompt</u>, a prompting strategy that enabled GPT-4 to achieve 90% accuracy on USMLE-style questions. Additionally, he contributed to the development of <u>PubMedBERT</u>, one of the early large language models focused on the biomedical domain, which earned the ACM Health Best Paper Award.

Prior to joining Microsoft Research, Naoto worked as a Software Engineer in Microsoft's Office new product incubation team, where he helped develop AI technologies for productivity, including <u>Office Lens</u>. Office Lens was recognized as 'Best App of the Year' by both Apple and Google, and its AI features have since been integrated into major Office products, reaching over one billion users worldwide.

Through the advancement of AI and scalable computational technologies, he strives to reshape healthcare, accelerate biomedical research, and empower humanity to reach its fullest potential.