

PhD and Postdoc Open Position on Realizing Precision Pathology

Bright scholars (PhD and Postdocs levels) are urgently needed to develop a precision digital pathology platform. With your talent, we will realize a platform to jointly analyze digital pathology images demonstrated on rapidly evolving cancers from rare osteosarcoma (bone) cancer, squamous cell (skin) carcinoma, to adenocarcinoma (cervical, breast, colon, lung, liver, GI tract) – affecting not only the Vietnamese population but many U.S. and Vietnam veterans community. The key insight driving our approach is that disease patterns learned from one patient cohort will successfully transfer and enhance the precision and understanding of another to comingle analytical applications on a shared AI-driven, supercomputer-accelerated platform.

Imagine what can you achieve with a smart health analytics ecosystem supported by: (1) unique data on patients with rare diseases in Vietnam – serving as an out-of-distribution testing set for the platform; (2) novel methods to be developed jointly with Mayo Clinic physicians, Coordinated Science Lab at Illinois, and VinUniversity faculty members; and (3) accelerated supercomputing platform hosted at the National Center for Supercomputing Applications (NCSA) at the University of Illinois at Urbana-Champaign.



Multiple positions including Postdoc, PhD, Master, to Undergraduate are available:

Qualifications

- (Postdoctoral Scholar) A Ph.D. in computer science, bioengineering, statistics, science or engineering in a specialization relevant to smart health.
- Familiarity in developing and using Machine Learning methods including Bayesian Networks, Deep Learning, Probabilistic Graphical Models, and Large Language Models.
- Experience working with heterogeneous health data sets such as the National Institutes of Health (NIH) Cancer Genome Atlas, data acquisition, preprocessing, and labeling.
- Hands-on experience with accelerated computing such as GPU architecture, and CUDA programming is preferred.

Key responsibilities:

- Integrate complementary statistical methodologies such as weakly supervised whole slice image segmentation and inference using label-free super-resolution images.
- Design experiments for validating early prediction of metastasis cancer on different datasets.
- Derive intelligently scheduling inference algorithms to accelerate the image processing pipeline.

Successful deliverables:

- Deploying a platform to attract funding agencies, and all-level students to VinUniversity, starting from high school, train Undergrad/Master/PhD students, and enrich supercomputing experience for postdoctoral scholars;
- Delivering and multiplexing computing allocation at the NCSA/CSL's supercomputer platform while being guided by domain experts operating medical AI analytics at Mayo-NCSA's secure HIPAA-compliant health enclave;
- Developing a new revenue stream of foundational AI pathology prediction models by licensing to U.S. hospitals focusing on Asian-American patients;
- Assisting Vinmec's AI-assisted pathologists will be productive and enable surgeons to realize transformational clinical outcomes, such as early recognition of tumors in super-resolution whole-slice images.

Key benefits:

- Each VISHC Postdoc Fellow will receive a total salary of \$90,000 for two years, of which \$30,000 will be for conducting research at VinUniversity and \$60,000 at UIUC. For more details please visit <https://smarthealth.vinuni.edu.vn/vishc-phd-and-postdoc-program/>

Application is open on a rolling basis:

- Please send your cover letter, CV, highlight most important publications, and name of references to both pcao3@illinois.edu (Dr. Phuong Cao) and hieu.ph@vinuni.edu.vn (Dr. Hieu Pham); Qualified candidates will be contacted for an interview. Please indicate in the email subject line VISHC_PRECISION_PATHOLOGY_{POSTDOC,PHD,MASTER,UNDERGRAD} application FIRSTNAME_LASTNAME.

