HUAN TRUONG

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I am seeking an opportunity to combine my interdisciplinary science research, high-performance software engineering, embedded hardware knowledge, and security experience to solve novel problems.

Education

- **University of Missouri – Columbia, MO** *Aug 2012 – Dec 2017*
  PhD Candidate in Bioinformatics.
- **Truman State University – Kirksville, MO** *Jan 2008 – Dec 2011*
  Bachelor of Science in Computer Science. Graduated with Department Honors.

Technical Skills

- **Computer Science**: Heterogeneous GPU algorithms and performance analysis, especially bioinformatics algorithms, modeling biological networks, network analysis, quantitative analysis.
- **Architecture-specific Software Development**: Android app development, heterogeneous parallel systems (*CUDA*), embedded processors (TI MSP, AVR, ARM), embedded software development, elementary electronics.
- **Cryptography and Security**: Basic cryptography, hardware hacking, network security.
- **Programming languages**: Strong understanding of C/CUDA, Go. Intermediate understanding of Java, PHP, HTML/CSS, JavaScript, Python.
- **Tools**: Git, LaTeX, data visualization (R), network visualization, UNIX Shell.

Professional Experience

- **Missouri Informatics Institute, University of Missouri – Columbia, MO** *Aug 2012 – Present*
  Research and Teaching Assistant. Evolutionary Systems Lab.
  - Conducted research on filtering noise from multi-dimensional biological data using high-performance computing.
  - Published 4 papers on sequence alignment, taxonomic clustering, motif finding – achieved 40x speedup with GPU.
  - Acted as teaching assistant for introductory molecular biology class and delivered graduate-level guest lectures.
- **Agency for Science, Technology and Research (A*STAR) – Singapore** *May – Aug 2015*
  Research Officer. Dr. Pauline Ng's Research Group.
  - Conducted preliminary research on implementing **factpub.org**, an automated NLP text extraction engine.
  - Spearheaded the creation of a browser extension that allows researchers to annotate and collaborate on the annotation of academic papers to provide an open knowledge social network.
- **Human-Computer Interaction Institute, Carnegie Mellon University – Pittsburgh, PA** *May – Jul 2011*
  Summer REU Intern. Pittsburgh Science of Learning Center.
  - Conducted research on enhancing conversational capability for simulated agent leading to more effective learning-by-teaching with elementary algebra.
  - Analyzed corpus of human input and studied patterns in students' shallow answers to develop more comprehensive questioning engine that would result in deeper understanding of methods and materials for student.
  - Implemented code in Java and conducted experiments to study the effectiveness of enhanced engine.

- **IT Services, Truman State University – Kirksville, MO** *Mar 2008 – Aug 2012*
  Software and Web Developer.
  - Deployed and installed new infrastructures and automated monitor-and-control systems for the whole campus.
  - Orchestrated the implementation of low cost, open hardware to replace embedded control devices infrastructure in classrooms. Cost reduction result: 1/20 of original cost.
  - Diagnosed and provided hand-on repair of network, software, and hardware related issues.
  - Created cross-platform school mobile app, websites, and maintained code repository for internal IT infrastructure.

Extracurricular Activities & Recognition

- **High Altitude Balloon (HAB) Education – hab.education** *Oct 2014 – Present*
  Co-Founder with Dustin Mayfield-Jones
  - Provided opportunities for domestic and international high school students to get involved in STEM by working on HAB launches to near space.
  - Engineered launch radio, software & hardware, planned lesson plans, organized work-shops and outreach events.
- **Security Bug Hunter, Firmware Developer, Hardware Hacker** *2012 – Present*
  Independent
  - Recognized in reputable security programs. E.g. Google Vulnerability Reward.
  - Developed patches for the LEDE (embedded Linux for router) and CyanogenMod to bring up on new devices.
  - Developed methods to disable the Intel Management Engine on commodity Chrome laptops.
- **On-Campus Student Activities**
  Various leadership positions
  - University of Missouri Informatics Institute: Secretary (2016), Treasurer (2015), Symposium Organizing Committee Member & Webmaster (2013-2016).
  - University of Missouri Vietnamese Student Association and the Vietnamese Institute: Event Organizing Committee Member & Treasurer (2015-2016), Webmaster (2014-2016).
  - Truman State University Free Software Club of Kirksville: President (2011-2012).
- **Programming Projects**
  Full list of projects can be found at www.tnhh.net/projects.html
  - Two-Factor Authentication in a Wristwatch. General time-based ("TOTP" SHA256+MD5) two-factor authentication on the TI Chronos watch platform, runs for years on one cell battery.
  - Android Sophia Keyboard: Smart keyboard, utilizing fuzzy word matching to enable fast Vietnamese input.
  - Go-md2: MD2 hashing implementation in Go programming language.
  - Truck, Thin client Linux: A Linux distribution designed to boot on diskless workstations for on-campus labs.

Selected Peer-reviewed Publications

- H. Truong, D. Li, K. Sajjapongse, G. Conant, and M. Becchi. Large-scale pairwise alignments on gpu clusters: Exploring the implementation space. *Journal of Signal Processing Systems*, pages 1–19, 2014
- A. Todd, H. Truong, J. Deters, J. Long, G. Conant, and M. Becchi. Parallel gene upstream comparison via multi-level hash tables on gpu. In *Parallel and Distributed Systems (ICPADS), 2016 IEEE 22nd International Conference on*, pages 1049–1058. IEEE, 2016
- M. J. Ellison, G. C. Conant, R. R. Cockrum, K. J. Austin, H. Truong, M. Becchi, W. R. Lamberson, and K. M. Cammack. Diet alters both the structure and taxonomy of the ovine gut microbial ecosystem. *DNA Research*, page dst044, 2013
- D. Li, K. Sajjapongse, H. Truong, G. Conant, and M. Becchi. A distributed cpu-gpu framework for pairwise alignments on large-scale sequence datasets. In *Application-Specific Systems, Architectures and Processors (ASAP), 2013 IEEE 24th International Conference on*, pages 329–338, 2013. doi: 10.1109/ASAP.2013.6567598