

HUAN TRUONG

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Sharing innovations and passion in science & technology through research & software - simple, secure, smart. I deliver fast, reliable software on GPUs, in vehicles, or at near space.

I am looking for an opportunity to deliver a great product that everyone loves to use.

Education

- **University of Missouri – Columbia, MO** Aug 2012 – May 2018
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:** NVIDIA CUDA, embedded processors (TI MSP, AVR, ARM), embedded software, Android development, [elementary electronics](#).
- **Cryptography and Security:** Elementary cryptography, hardware hacking.
- **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 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 students.
 - 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 hands-on repair of network, software, and hardware related issues.
- Created cross-platform school mobile app and spearheaded a common code repository for IT infrastructure.

Extracurricular Activities & Recognition

- **High Altitude Balloon (HAB) Education – hab.education**

Oct 2014 – Present

Co-Founder with Dustin Mayfield-Jones

- Provided opportunities for high school students to get involved in STEM by working on HAB launches to near space.
- Engineered and optimized software & hardware, planned lesson plans, organized workshops and outreach events.

- **Security Bug Hunter, Firmware Developer, Hardware Hacker**

2012 – Present

Independent

- Developed Crankshaft (getCrankshaft.com) - turnkey GNU/Linux distribution that turns a Raspberry Pi to a free software aftermarket Android Auto head unit. Critically received by end-users and media outlets (2018).
- Recognized in reputable security programs e.g. Google Vulnerability Reward (2017).
- Contributed patches for OpenWRT embedded Linux OS and CyanogenMod to bring up on new devices (2012-2017).
- Worked extensively on the Chumby to make the device a cheap, open, general-purpose hardware (2014).

- **Programming & Writing**

Full list of projects can be found at tnhh.net/projects.html

- [Two-Factor Authentication in a Wristwatch](#). General/"Google"-styled time-based two-factor authentication ("TOTP" SHA256+MD5 on 2KB RAM) on the TI Chronos watch platform, runs for years on one cell battery (2011).
- [Personal blog](#): Insightful views on science and technology. Many entries were critically received by social media networks: YCombinator/Slashdot/reddit/Engadget (2013-Present).
- [Truck, Thin client Linux](#): A diskless, non-restricted Linux distribution designed to boot on lab computers (2011).

- **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).

Selected Peer-reviewed Publications

Google Scholar: [Huan Truong N.H.](#)

- 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