Duong Hoang

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Education

University of Utah — **United States**
Candidate for Doctor of Philosophy (Computer Science) — *2014–present*
GPA: 3.833/4

National University of Singapore — **Singapore**
Master of Computing (Computer Science) — *2010–2012*
GPA: 4.67/5

National University of Singapore — **Singapore**
Bachelor of Computing (Computer Science), Second Class Honours (Upper) — *2006–2010*
GPA: 4.16/5

Experience

Lawrence Livermore National Laboratory — **Livermore, United States**
Student Intern (Supervisor: Dr. Peter Lindstrom) — *May–August 2018*
Developed compression schemes for particle data based on binomial coding.

Lawrence Livermore National Laboratory — **Livermore, United States**
Student Intern (Supervisor: Dr. Peter Lindstrom) — *May–August 2017*
Compared task-optimized bit streams, and developed heuristics for data-optimal streaming.

Lawrence Livermore National Laboratory — **Livermore, United States**
Student Intern (Supervisor: Dr. Peter Lindstrom) — *June–August 2016*
Implemented and compared different bit ordering schemes for wavelet transformed coefficients.

Lawrence Livermore National Laboratory — **Livermore, United States**
Student Intern (Supervisor: Dr. Peter Lindstrom) — *May–July 2015*
Implemented and compared approaches for combining zfp (precision reduction) and IDX (resolution reduction).

Core Resolution Pte Ltd (www.core-resolution.com) — **Singapore**
Research Engineer — *2012–2014*
Led a team that developed software for use in the failure analysis of semiconductor products. Languages, libraries, and tools used: Boost, C++, Camelot MaskView, Hg, KLayout, OpenCV, Poco, premake, Qt.

- Developed a novel matching engine that aligns inspection images with design layouts. The engine was the first of its kind, and was integrated into Camelot MaskView - a layout navigation tool from Synopsys.
- Wrote a parser for design layouts stored in GDSII format, supporting fast region-of-interest queries.
- Wrote a prototype for converting design layouts back to schematic diagrams.

National University of Singapore — **Singapore**
Research Assistant (Supervisor: Prof. KangKang Yin) — *2011–2012*
Helped on several animation publications that were accepted to top conferences and journals. Languages, libraries, and tools used: C++, Eigen, GLSL, Hg, OpenGL, Orge3D, Vicon Blade.

- Developed a motion editing framework for an HCI project on displaying character's locomotion gaits conveyed by a two-finger input.
- Corrected flawed data and create new results for a TVCG paper on learning mesh deformation models from sparse training data. Implemented an extension that uses inverse kinematics to reduce the number of input markers.
- Added per-pixel lighting and real-time ambient occlusion, and rendered some results for an SCA paper on controlling rolling motions of human-like characters.

Grants

NASA Earth Exchange Award *October 2021*

A Flexible Encoding Framework and Autonomic Runtime System for Progressive Streaming of Scientific Data

The one year, $100K award helps climate scientists study terabytes of climate datasets, manage workflows and reduce data management costs, advancing the study of extreme-scale scientific data.

Awards

LDAV 2021 **New Orleans, United States**

Best paper honorable mention *October 2021*

High-Quality and Low-Memory-Footprint Progressive Decoding of Large-scale Particle Data

CS6630 - Visualization **University of Utah**

Best project (out of 33) *Fall 2015*

A framework to visualize SIGGRAPH publications over the years, with abstracts, authors, keywords, and citation relationships. See `http://dataviscourse.net/2015/fame/`.

National University of Singapore **NUS, Singapore**

Dean's List *Academic Year 2009/10, Semester 1*

CS3215 - Software Engineering Project Course **NUS, Singapore**

Brooks award for most accurate implementation *Academic Year 2007/08, Semester 2*

Ten teams used C# to implement a static program analyzer (average size: 15 KLOC). Only one team won the award, given to the software with the fewest bugs.

CONTRAST: 24-hour game design competition **NUS, Singapore**

Most Innovative Game *September 2006*

Part of a team of three developing a two-player competitive game using GameMaker.

Languages

Vietnamese: Native *Mother tongue*

English: Fluent *Used daily at work*

Publications and Contributions

[1] D. Hoang, H. Bhatia, P. Lindstrom, and V. Pascucci, "High-quality and low-memory-footprint progressive decoding of large-scale particle data," in *Proceedings of the 11th IEEE Symposium on Large Data Analysis and Visualization (LDAV)*, 2021.

[2] K. Fan, D. Hoang, S. Petruzza, T. Gilray, P. Valerio, and S. Kumar, "Load-balancing parallel

i/o of compressed hierarchical layouts," in *Proceedings of the 28th IEEE International Conference on High Performance Computing, Data, and Analytics (HiPC)*, 2021.

[3] D. Hoang, B. Summa, H. Bhatia, P. Lindstrom, P. Klacansky, W. Usher, P.-T. Bremer, and V. Pascucci, "Efficient and flexible hierarchical data layouts for a unified encoding of scalar field precision and resolution," *IEEE Transactions on Visualization and Computer Graphics*, vol. 27, no. 2, pp. 603–613, 2021.

[4] H. Bhatia, D. Hoang, G. Morrison, W. Usher, V. Pascucci, P.-T. Bremer, and P. Lindstrom, "AMM: Adaptive multilinear meshes," 2020.

[5] D. Hoang, P. Klacansky, H. Bhatia, P.-T. Bremer, P. Lindstrom, and V. Pascucci, "A study of the trade-off between reducing precision and reducing resolution for data analysis and visualization," *IEEE Transactions on Visualization and Computer Graphics*, vol. 25, no. 1, pp. 1193–1203, 2019.

[6] S. Kumar, S. Petruzza, D. Hoang, and V. Pascucci, "Accelerating in-situ feature extraction of large-scale combustion simulation with subsampling," in *The International ACM Symposium on High-Performance Parallel and Distributed Computing (HPDC)*, 2017.

[7] S. Kumar, D. Hoang, S. Petruzza, J. Edwards, and V. Pascucci, "Reducing network congestion and synchronization overhead during aggregation of hierarchical data," in *Proceedings of the IEEE 24th International Conference on High Performance Computing, Data, and Analytics (HiPC)*, 2017.

[8] K. Wu, D. Hoang, and A. Lex, "Visualizing publication data," in *IEEE Visualization Conference (VIS)*, 2016.

[9] T.-D. Hoang and K.-L. Low, "Efficient screen-space approach to high-quality multiscale ambient occlusion," *The Visual Computer*, vol. 28, no. 3, pp. 289–304, 2012.

[10] T.-D. Hoang and K.-L. Low, "Multi-resolution screen-space ambient occlusion," in *Proceedings of the 28th Computer Graphics International Conference (CGI)*, 2011.

[11] B. Peng, K.-L. Low, and T.-D. Hoang, "Real-time csg rendering using fragment sort," in *Proceedings of the 17th ACM Symposium on Virtual Reality Software and Technology (VRST)*, p. 99–100, 2010.

[12] H. Huang, K. Yin, L. Zhao, Y. Qi, Y. Yu, and X. Tong, "Detail-preserving controllable deformation from sparse examples," *IEEE Transactions on Visualization and Computer Graphics*, vol. 18, no. 8, pp. 1215–1227, 2012.

[13] D. Brown, A. Macchietto, K. Yin, and V. Zordan, "Control of rotational dynamics for ground behaviors," in *Proceedings of the 12th ACM SIGGRAPH/Eurographics Symposium on Computer Animation*, pp. 55–61, 2013.