Khanh N. Dang

Personal Information

Position	Associate Professor
Affiliation	Department of Computer Science and Engineering, The University of Aizu 965-8580 Tsuruga, Ikki-Machi, Aizu-Wakamatsu, Fukushima, Japan
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Research Interests

My current research is in advancing computing architectures that achieve ultra-low-power and scalable solutions. The key research topics are: neuromorphic computing, 3D-ICs, and sustainable computing.

Education

10/2014–09/2017	**Ph.D., Computer Science and Engineering**, The University of Aizu, Japan
12/2011–04/2014	**M.Sc. (M2), Information Systems, and Technology**, Paris-Sud University, France
09/2007–06/2011	**B.Sc., Electronics and Telecommunications**, Vietnam National University, Hanoi, Vietnam

Professional Experience

04/2022–Current	**The University of Aizu, Japan** Position: Associate Professor
11/2017–03/2022	**Vietnam National University, Hanoi, Vietnam** Position: Lecturer
11/2020–03/2021	**The University of Aizu, Japan** Position: Visiting Researcher
05/2019–09/2019	**The University of Aizu, Japan** Position: Visiting Researcher
07/2011–09/2014	**SISLAB, Vietnam National University, Hanoi, Vietnam** Position: Researcher
10/2010–04/2011	**Dolphin Inc.** Position: RTL Engineer Intern

Selected Publications

Selected Books/Book Chapter (Published: Books: 2; Book-chapters: 3)

1. Abderazek Ben Abdallah and Khanh N. Dang (authors). *Neuromorphic computing principles and organization (1st edition)*. Springer, 1 edition, 2022. ISBN 978-3-030-92524-6
2. Abderazek Ben Abdallah and Khanh N. Dang (authors). *Neuromorphic computing principles and organization (2nd edition)*. Springer, 2 edition, 2025. ISBN 978-3-031-83091-4
3. Nguyen, Ngo-Doanh, Akram Ben Ahmed, Abderazek Ben Abdallah, and Khanh N. Dang. Low-power 3D-IC-based Spiking Neural Network. In *Energy-Efficient Devices and Circuits for Neuromorphic Computing*, chapter 9. Elsevier, 2025

Selected Journal Publications (Published: 22)

1. Kobayashi, Ryoji, Ngo-Doanh Nguyen, Abderazek Ben Abdallah, Nguyen Anh Vu Doan, and Khanh N. Dang. ApproxiMorph: Energy-efficient Neuromorphic System with Layer-wise Approximation of Spiking Neural Networks and 3D-Stacked SRAM. *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, 45(45):1182–1196, March 2026. URL https://doi.org/10.1109/TCAD.2025.3597251
2. Nguyen, Ngo-Doanh, Akram Ben Ahmed, Abderazek Ben Abdallah, and Khanh N. Dang. Power-Aware Neuromorphic Architecture With Partial Voltage Scaling 3-D Stacking Synaptic Memory. *IEEE Transactions on Very Large Scale Integration (VLSI) Systems*, 31(12):2016–2029, 2023. URL https://doi.org/10.1109/TVLSI.2023.3318231
3. Khanh N. Dang, Akram Ben Ahmed, Abderazek Ben Abdallah, and Xuan-Tu Tran. Hotcluster: a thermal-aware defect recovery method for through-silicon-vias toward reliable 3-D ICs systems. *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, 41(4):799–812, 2021. URL https://doi.org/10.1109/TCAD.2021.3069370
4. Khanh N. Dang, Akram Ben Ahmed, Yuichi Okuyama, and Abderazek Ben Abdallah. Scalable design methodology and online algorithm for TSV-cluster defects recovery in highly reliable 3D-noc systems. *IEEE Transactions on Emerging Topics in Computing*, 8(3):577–590, 2020. URL https://doi.org/10.1109/TETC.2017.2762407

5. Khanh N. Dang, Akram Ben Ahmed, Xuan Tu Tran, Yuichi Okuyama, and Abderazek Ben Abdallah. A comprehensive reliability assessment of fault-resilient Network-on-Chip using analytical model. *IEEE Transactions on Very Large Scale Integration (VLSI) Systems*, 25(11):3099–3112, 2017. URL https://doi.org/10.1109/TVLSI.2023.3318231

Selected Conference papers (Published: 40)

1. Yuga Hanyu, Ravi Hariprakash Subbaiah, Abderazek Ben Abdallah, Zhishang Wang, and Khanh N. Dang. GreenMorph: Sustainable Neuromorphic Computing through Energy-Harvesting and Energy-Driven Online STDP Learning. In *Proceedings of the IEEE International Symposium on Circuits and Systems (ISCAS), Lecture*, May 2026
2. Duy-Anh Nguyen, Xuan-Tu Tran, Khanh N. Dang, and Francesca Iacopi. A lightweight max-pooling method and architecture for deep spiking convolutional neural networks. In *2020 IEEE Asia Pacific Conference on Circuits and Systems (APCCAS)*, pages 209–212. IEEE, 2020
3. Khanh N. Dang, Michael Meyer, Akram Ben Ahmed, Abderazek Ben Abdallah, and Xuan-Tu Tran. 2D-PPC: A single-correction multiple-detection method for Through-Silicon-Via faults. In *2019 IEEE Asia Pacific Conference on Circuits and Systems (APCCAS 2019)*, 2019
4. Khanh N. Dang, Akram Ben Ahmed, Ben Abdallah Abderrazak, and Xuan-Tu Tran. TSV-IaS: Analytic analysis and low-cost non-preemptive on-line detection and correction method for TSV defects. In *Proc. IEEE Computer Society Annual Symp. VLSI (ISVLSI)*, pages 501–506, 2019
5. Khanh N. Dang, Michael Meyer, Yuichi Okuyama, and Abderazek Ben Abdallah. Reliability assessment and quantitative evaluation of soft-error resilient 3D network-on-chip systems. In *2016 IEEE 25th Asian Test Symposium (ATS)*, pages 161–166. IEEE, 2016

Selected Patents (Granted: 4; Pending: 7)

1. A. Ben Abdallah, Khanh N. Dang, Masayuki Hisada, "A TSV fault-tolerant router system for 3D-Networks-on-Chip" No. 7239099, Japan patent. https://patents.google.com/patent/JP2019092020A/en
2. A. Ben Abdallah, Khanh N. Dang, "On-chip 3D system in which tsv group including multiple tsvs connect layers", No. 7488989, Japan patent. https://patents.google.com/patent/JP2021190829A/en
3. A. Ben Abdallah, Khanh N. Dang, Masayuki Hisada, "Multiple error detection circuit detecting multiple errors in multiple links and error correction circuit having multiple error detection circuit", No. 7659250, Japan patent. https://patents.google.com/patent/JP2022063152A/en
4. A. Ben Abdallah, Huakun Huang, Khanh N. Dang, Jiangning Song, "AI Processor", No. 7699791, Japan patent. https://patents.google.com/patent/JP2022083341A/en
5. Khanh N. Dang, A. Ben Abdallah, "Program for generating migration flows for homogeneous computing systems and homogeneous computing devices", No. 2022-196416, Japan patent, (patent pending). https://patents.google.com/patent/JP2024082516A/en
6. Khanh N. Dang, A. Ben Abdallah, Nguyen Ngo Doanh, "Neural Network Processor", No. 2024-047372, Japan patent, (patent pending). https://patents.google.com/patent/JP2025146538A/en

Selected Grants (as PI))

1. "Energy-Efficient Hybrid Memory based Architecture for Next-Generation AI Systems", PI, funded by Grants-in-Aid for Scientific Research (B) KAKENHI (2026-2028).
2. "Combination of Approximate Computing and Approximate Stacking Memory for Low-power Neuromorphic Computing", main PI, funded by UoA Competitive Research Funding under No. P27-2023 (2024-2025).
3. "Low-power Spiking Neural Network Solution for IoT and Edge devices", main PI, funded by UoA Competitive Research Funding under No. P26-2023 (2023-2024).
4. "Hotspot aware Fault-Tolerant Architectures and Algorithms for TSV-based 3D Network-on-Chips", main PI, funded by National Foundation for Science and Technology Development (NAFOSTED) under No. 102.01-2018.312 (2019-2021).

Honors & Awards

2015	Second Prize of Vietnamese Nhan Tai Dat Viet Award 2015. Awarded to the VENGME team.
2021	Best Student Paper Award at International Symposium on Ubiquitous Networking (UNet 2021)
2023	Best Paper Award at 023 IEEE 6th International Conference on Electronics Technology (ICET)
2014-2017	Monbukagakusho Honors Scholarship by Japan Students Services Organization (JASSO)

[*CV compiled on April 16, 2026.*]