Aolong Zha

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Employment

2021.04 – 2024.01 **Project Assistant Professor**, Research Center for Advanced Science and Technology, The University of Tokyo, Japan.

2018.11 – 2021.03 **Postdoctoral Researcher**, Artificial Intelligence Research Center, National Institute of Advanced Industrial Science and Technology, Japan.

2018.04 – 2018.10 **Technical Staff**, Faculty of Information Science and Electrical Engineering, Kyushu University, Japan.

Education

2015.04 – 2018.03 **Ph.D.**, *Informatics*, Graduate School of Information Science and Electrical Engineering, Kyushu University, Japan.
Dissertation: *Improvements of SAT Solving Techniques and Their Application to the Coalition Structure Generation Problem.* http://hdl.handle.net/2324/1959138

2013.04 – 2015.03 **M.Sc.**, *Informatics*, Graduate School of Information Science and Electrical Engineering, Kyushu University, Japan.

2008.09 – 2012.06 **B.Eng.**, *Network Engineering*, College of Mathematics and Informatics, South China Agriculture University, China.

Research Publications

Journal Articles

1. Chang, Q., Xu, X., **Zha**, **A.**, Er, M. J., Sun, Y., & Li, Y. (2024). Tinystereo: A tiny coarse-to-fine framework for vision-based depth estimation on embedded gpus. *IEEE Trans. Syst. Man Cybern. Syst.*, *54*(8), 5196–5208. doi:10.1109/TSMC.2024.3395464

2. Hara, H., **Zha**, **A.**, & Imura, N. (2024). Optimization of transport costs and co_2 emissions through modal shift to railways using actual shipment amount. *J. Jpn. Logist. Soc.*, *32*, 55–62. (in Japanese).

3. Li, X., Chang, Q., **Zha**, **A.**, Chang, S., Li, Y., & Miyazaki, J. (2024). An optimized GPU implementation for GIST descriptor. *ACM Trans. Archit. Code Optim.* doi:10.1145/3689339

4. Hara, H., **Zha**, **A.**, & Imura, N. (2023). Assessment of the effects of extending delivery deadline and shelf-life of processed food products on the amount of food loss by a monte carlo simulation. *J. Jpn. Logist. Soc.*, *31*, 121–128. (in Japanese).

5. **Zha**, **A.**, Chang, Q., & Noda, I. (2023). An incremental SAT-based approach for solving the real-time taxi-sharing service problem. *Discret. Appl. Math.*, *335*, 131–145. doi:10.1016/j.dam.2022.08.008

6. Chang, Q., **Zha**, **A.**, Wang, W., Liu, X., Onishi, M., Lei, L., … Maruyama, T. (2022). Efficient stereo matching on embedded GPUs with zero-means cross correlation. *J. Syst. Archit.*, *123*, 102366. doi:10.1016/j.sysarc.2021.102366

7. **Zha**, **A.**, Koshimura, M., & Fujita, H. (2019). *N*-level modulo-based CNF encodings of pseudo-Boolean constraints for MaxSAT. *Constraints An Int. J.*, *24*(2), 133–161. doi:10.1007/s10601-018-9299-0

8. **Zha**, **A.**, Koshimura, M., Sakurai, Y., & Yokoo, M. (2019). Coalition structure generation for partition function games utilizing partition decision trees. *IEICE Trans. Inf. Syst.*, *J102-D*(4), 313–323. (in Japanese). doi:10.14923/transinfj.2018JDP7037

Conference Proceedings

1. **Zha**, **A.**, Chang, Q., Imura, N., & Nishinari, K. (2023). A case study of the profit-maximizing multi-vehicle pickup and delivery selection problem for the road networks with the integratable nodes. In *Computational science - ICCS 2023 - 23rd international conference, prague, czech republic, july 3-5, 2023, proceedings, part III* (Vol. 14075, pp. 454–468). doi:10.1007/978-3-031-36024-4_35

2. Gao, R., **Zha**, **A.**, Shigenaka, S., & Onishi, M. (2021). Hybrid modeling and predictive control of large-scale crowd movement in road network. In *HSCC '21: 24th ACM International Conference on Hybrid Systems: Computation and Control, Nashville, TN, USA, May 19-21, 2021*. doi:10.1145/3447928.3456641

3. Chang, Q., **Zha**, **A.**, Wang, W., Liu, X., Onishi, M., & Maruyama, T. (2020). Z2-ZNCC: zigzag scanning based zero-means normalized cross correlation for fast and accurate stereo matching on embedded GPU. In *38th IEEE International Conference on Computer Design, ICCD 2020, Hartford, CT, USA, October 18-21, 2020* (pp. 597–600). doi:10.1109/ICCD50377.2020.00104

4. **Zha**, **A.**, Gao, R., Chang, Q., Koshimura, M., & Noda, I. (2020). CNF encodings for the min-max multiple traveling salesmen problem. In *32nd IEEE International Conference on Tools with Artificial Intelligence, ICTAI 2020, Baltimore, MD, USA, November 9-11, 2020* (pp. 285–292). doi:10.1109/ICTAI50040.2020.00053

5. Chang, Q., **Zha**, **A.**, Onishi, M., & Maruyama, T. (2019). A GPU accelerator for domain transformation-based stereo matching. In *ACAI '19: 2nd ACM International Conference on Algorithms, Computing and Artificial Intelligence, Sanya, China, December 20-22, 2019* (pp. 370–376). doi:10.1145/3377713.3377806

6. **Zha**, **A.**, Koshimura, M., & Fujita, H. (2017). A hybrid encoding of pseudo-Boolean constraints into CNF. In *Conference on Technologies and Applications of Artificial Intelligence, TAAI 2017, Taipei, Taiwan, December 1-3, 2017* (pp. 9–12). doi:10.1109/TAAI.2017.15

7. **Zha**, **A.**, Nomoto, K., Ueda, S., Koshimura, M., Sakurai, Y., & Yokoo, M. (2017). Coalition structure generation for partition function games utilizing a concise graphical representation. In *PRIMA 2017: Principles and Practice of Multi-Agent Systems - 20th International Conference, Nice, France, October 30 - November 3, 2017, Proceedings* (Vol. 10621, pp. 143–159). doi:10.1007/978-3-319-69131-2_9

8. **Zha**, **A.**, Uemura, N., Koshimura, M., & Fujita, H. (2017). Mixed radix weight totalizer encoding for pseudo-Boolean constraints. In *29th IEEE International Conference on Tools with Artificial Intelligence, ICTAI 2017, Boston, MA, USA, November 6-8, 2017* (pp. 868–875). doi:10.1109/ICTAI.2017.00135

Miscellaneous Achievements

Presentations

1. **Zha**, **A.**, & Noda, I. (2020b). Real-time taxi-sharing service application based on Boolean satisfiability techniques. In *6th International Conference on Computational Social Science, IC2S2 2020, Cambridge, MA, USA, July 17-20, 2020.* (oral presentation). Retrieved from http://ic2s2.mit.edu/program

Reports

1. **Zha**, **A.**, & Noda, I. (2020a). CNF encodings for the min-max multiple traveling salesmen problem. In *Workshop of Social System and Information Technology - 198th Domestic Society on Intelligent Computing System, WSSIT 2020* (pp. 1–8). IPSJ. Retrieved from http://id.nii.ac.jp/1001/00203598

2. **Zha**, **A.**, Chang, Q., & Noda, I. (2019). An incremental MaxSAT approach for solving the realtime taxi-sharing service problem. In *109th Special Interest Group on Fundamental Problems in Artificial Intelligence, SIG-FPAI 2019* (pp. 44–49). JSAI. Retrieved from http://id.nii.ac.jp/1004/00009705

3. Koshimura, M., **Zha**, **A.**, Nomoto, K., Sakurai, Y., & Yokoo, M. (2017a). A MaxSAT encoding of coalition structure generation for partition function games. In *31st Annual Conference of the Japanese Society for Artificial Intelligence, JSAI 2017* (p. 1M31). doi:10.11517/pjsai.JSAI2017.0_1M31

4. Koshimura, M., **Zha**, **A.**, Nomoto, K., Sakurai, Y., & Yokoo, M. (2017b). Maxsat encoding for partition decision trees based coalition structure generation problem. In *79th National Convention of Information Processing Society of Japan, IPSJ 2017* (pp. 39–40). IPSJ. Retrieved from http://id.nii.ac.jp/1001/00180706

5. Uemura, N., Fujita, H., Koshimura, M., & **Zha**, **A.** (2017). A SAT encording of pseudo-Boolean constraints based on mixed radix. In *103rd Special Interest Group on Fundamental Problems in Artificial Intelligence, SIG-FPAI 2017* (pp. 12–17). JSAI. Retrieved from http://id.nii.ac.jp/1004/00008596

6. **Zha**, **A.**, Koshimura, M., & and, H. F. (2016). Introducing pure literal elimination into CDCL algorithm. In *99th Special Interest Group on Fundamental Problems in Artificial Intelligence, SIG-FPAI 2016* (pp. 23–27). JSAI. Retrieved from http://id.nii.ac.jp/1004/00000772

7. **Zha**, **A.**, & Hasegawa, R. (2015). Parallel portfolio SATzilla2012. In *97th Special Interest Group on Fundamental Problems in Artificial Intelligence, SIG-FPAI 2015* (pp. 59–64). JSAI. Retrieved from http://id.nii.ac.jp/1004/00000588

Competition Experience and Awards

2018 — Solver: GluHack **took 2nd place** in *Random Track*, SAT Competition 2018.

— Solver: QMaxSAT took 5th place in *Weighted Complete Track*, MaxSAT Evaluation 2018.

2017 — Solver: QMaxSAT **took 2nd place** in *Weighted Complete Track*, MaxSAT Evaluation 2017.

2016 — Solver: GlucosePLE took 7th place in *Agile Track*, SAT Competition 2016.

Lectures

2021.06 – 2022.06 — Advanced Information Systems (Omnibus) for doctoral students of the Department of Advanced Disciplinary Studies, The University of Tokyo (2 credits)

Patents

2021.07 — Title of the invention: *To provide a path planning device, a path planning method, and program.* Inventors: **Zha, A.**, Noda, I., & Ochiai, J. Registration No.: JP7294660B.

Skills

Languages — Strong reading, writing and speaking competencies for English, Japanese, Mandarin Chinese, Cantonese.

Coding — C, C++, Java, Python, Ruby, SQL, LaTeX, …

Web Dev. — Html, css, JavaScript, Apache Web Server, Tomcat Web Server.

Misc. — Academic research, Teaching, Training, Consultation, Solving puzzles, Painting.