

Resume

(As of 2024/02/15)

Name	Han	Jixin	Gender	Male
Date of birth	December 21, 1992	Nationality	China	
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Education Background

Sep. 2010	Entry	Faculty of Humanities, Beijing Language University	
Mar. 2011	Transfer	(Transferred from the Faculty of Humanities to the Faculty of Information Sciences, Beijing University of Languages)	
Apr. 2011	Entry	Department of Computer Science, Faculty of Information Science, Beijing Language University	
Aug. 2014	Graduate		
Sep. 2014	Entry	Department of Information Science and Technology (Non-degree student), Graduate School of Fundamental Science and Technology, Waseda University	
Aug. 2015	Graduate		
Sep. 2015	Entry	Department of Information Science and Technology (Skipped Grade), Graduate School of Fundamental Science and Technology, Master Course, Waseda University	
Mar. 2017	Graduate		
Apr. 2017	Entry	Department of Information Science and Technology, Graduate School of Fundamental Science and Technology, Doctoral Course, Waseda University	
Mar. 2022	Graduate		
Degree		Ph.D. (Engineering)	Date of receipt March 15, 2022

career

Apr. 2017 ~March 2020	Waseda University, Faculty of Fundamental Science and Engineering, Department of Information Science and Technology, Research Associate By using mathematics to examining whether a compiler is able to maintain the correct behavior and meaning of a program when it automatically parallelizes the program, it is possible to logically infer the execution of parallel programs. After abstractly defining the grammar and semantics of a program, the rationality of parallel program execution was formally defined, and the program could be verified. This research was carried out jointly with INRIA in France and the University of Arizona in the United States, and the contribution were successfully presented at international conferences and in journal. In addition to research, I also provides research guidance and experimental lectures for students. Skills: C/C++, NodeJS, Coq, Haskell, Compiler Optimization Technology, Parallel Processing Technology, Formal Verification, Model checking, Reasoning and Reasoning in Mathematical Theory, Logic Programming
April 2019 - September 2020	Ic President In September 2018, IEEE's world-class student academic organization called IEEE Eta-Kappa-Nu was founded as Japan's first IEEE student chapter (Mu-Tau Chapter) under Waseda University. I was appointed as president in 2019. While enrolled, I was involved in various activities in collaboration with student chapters in the United States and Europe, and won the Outstanding Chapter Award in Boston, USA in November of the same year. Skills: Leadership
April 2020 ~March 2021	Research Assistant, Graduate School of Information Science and Technology, Waseda University During this period, I focused on the research that allows programs running on non-volatile memory to always maintain their correct program properties. I proposed a rational implementation method and formally proved that a program based on this implementation method can always operate correctly even in an uncertain execution environment, such as system crash. This goal is achieved by abstracting the memory structure of non-volatile memory, expressing the operation of memory propagation in a mathematical formula, and formally defining the grammar and semantics of the program. This research was published in a peer-reviewed academic journal.

	Skills: Python, RUST, C/C++, Hoare Logic, Rely-Guarantee programming, Memory consistency/persistency model, RISC-V, x86 low-level programming,
April 2022 ~Dec 2023	<p>Honda Motor Co., Ltd., Electric Business Development Division, BEV Development Center, Software-Defund Mobility Development Department, Advanced Safety and Intelligent Solution Development Department, Intelligent Solution Laboratory, Engineer/Researcher</p> <p>When I was in Honda, I was developing a multi-task DNN model for autonomous driving. The tasks include detection, segmentation, keypoints, optical flow, and tracking. In order to train the network with resource limited dataset, I tried to use several dataset enhancement techniques, such as active learning, pseudo labeling, to optimize the training. Recently, I have started developing BEV. The frameworks used are Darknet and PyTorch.</p> <p>Additionally, in order to perform real-time inference on in-vehicle hardware with limited computational resources, I optimized perception's multi-task model to suit the hardware structure. I used C++ to perform parallel processing and asynchronous execution, used CUDA to speed up DNN pre-processing/post-processing, and used TensorRT to optimize each layer of DNN. I also created some custom DNN operations in C++ and CUDA to exploit higher parallelism. Other optimizations include reducing the size of the model using quantization and pruning, and replacing low-density calculations with other calculations within the Transformer and CNN.</p> <p>Skills: C/C++; CUDA & cuDNN & TensorRT; PyTorch; GO</p>
January 2024 ~ Present	<p>T2 Auto</p> <p>T2 auto is a startup company, where most of the software prototype is under development. When I am in T2 auto, I belong to the perception team. My job is to develop a BEVFusion model and deploy the model into NVIDIA architecture. The BEVFusion model uses LiDAR and camera as input sensors. I tried several different tactics to reach high precision and fast inference speed. For example, develop customized BEVPool methods to accelerate the projection from camera view to BEV grid, or use deformable attention as a substitute of BEV Pool.</p> <p>Besides, in the aspect of deployment, I also develop some benchmark tools to both training model and deployed model. These benchmark tools contain layer-wise precision analysis, coarse/fine-grained speed analysis, and so on.</p> <p>Skills: C/C++; CUDA & cuDNN & TensorRT; PyTorch</p>
April 2023 ~Present	<p>Waseda University, Graduate School of Information Science and Technology, Visiting Researcher and Part-time Lecturer</p> <p>As a part-time lecturer at Waseda University's Graduate School of Fundamental Science and Engineering, I teach one class per week. My subject is C/C++ programming. At the same time, I am also a visiting researcher at Waseda University's research institute. My research interests include Transformer optimization and architecture design.</p>
January 2023 ~Present	<p>Online Webinar Lecture (Autonomous driving, TensorRT deployment)</p> <p>I am coaching an online class in China similar to "Udemy", and offers the course related to "High Performance Implementation Using CUDA and TensorRT in Autonomous Driving". The content is deployment of various OSS SOTA models using CUDA acceleration methods and TensorRT API. In addition to these, it also includes computer architecture and parallel processing technology.</p>

Appealing points
Academic Disciplines
<p>(A) Peer-reviewed journals, journals, and original papers</p> <p>①(First)(Peer-reviewed) "Durable Queue Implementations built on a Formally Defined Strand Persistency Model", Journal of Information and Processing, Jun 2021, Jixin Han, Keiji Kimura</p> <p>(B) Peer-reviewed papers at international conferences</p> <p>①(First)(Peer-reviewed)"Parallelizing Compiler Translation Validation Using Happens-Before and Task-Set", The 9th International Workshop on Computer Systems and Architectures (CSA'21), Oct 2021, Jixin Han, Tomofumi Yuki, Michelle Mills Strout, Dan Umeda, Hironori Kasahara, Keiji Kimura.</p> <p>②(Peer-reviewed)"Fast and Highly Optimizing Separate Compilation for Automatic Parallelization", The 2019 International Conference on High Performance Computing & Simulation (HPCS 2019), Jul 2019, Tohma Kawasumi, Ryota Tamura, Yuya Asada, Jixin Han, Hiroki Mikami, Keiji Kimura, Hironori Kasahara</p> <p>③((Peer-reviewed)"Reducing parallelizing compilation time by removing redundant analysis", Proceedings of the 3rd International Workshop on Software Engineering for Parallel Systems, co-located with SPLASH 2016, Oct 2016, Jixin Han, Rina Fujino, Ryota Tamura, Mamoru Shimaoka, Hiroki Mikami, Moriyuki Takamura, Sachio Kamiya, Kazuhiko Suzuki, Takahiro Miyajima, Keiji Kimura, Hironori Kasahara</p> <p>(C) Conference Presentations</p> <p>①"Proving the Correctness of NVM Recovery under Strand Persistency Model", Information Processing Society of Japan (IPSJ-PRO), Sep 2021, Jixin Han, Keiji Kimura</p> <p>②"The Translation validation for the Coarse-grain Parallelizing Compiler", Information Processing Society of Japan (IPSJ-PRO), Jixin Han, Tomofumi Yuki, Michelle Strout, Keiji Kimura</p> <p>③"Verified Translation Validation Technique for OSCAR Automatically Parallelizing Compiler", Information Processing Society of Japan (IPSJ-PRO), Sep 2018, Jixin Han, Tomofumi Yuki, Michelle Strout, David Padua, Hironori Kasahara, Keiji Kimura</p> <p>④"Code Generating Method with Profile Feedback for Reducing Compilation Time of Automatic Parallelizing Compiler", Information Processing Society of Japan, Special Interest Group on System Architecture (ARC217@ETNET2017), Mar. 2017, Rina Fujino, Jixin Han, Mamoru Shimaoka, Hiroki Mikami, Takahiro Miyajima, Moriyuki Takamura, Keiji Kimura, Hironori Kasahara</p>
Awards & Qualifications
<p>(1) IPSJ Yamashita Memorial Award (2023): "Durable Queue Implementations built on a Formally Defined Strand Persistency Model"Paper awarded</p> <p>(2) IEEE HKN Outstanding Chapter Award (2020): IEEE HKN activities were recognized as IEEE HKN Japanese Chapter President.</p> <p>(3) IEEE HKN Outstanding Chapter Award(2019):</p> <p>(4) MCM/ICM (2014/2012): Participated in the Mathematical Modeling Contest and won the Honorable Mention in 2012 and the Meritorious Winner in 2014, respectively</p> <p>(5) ACM/ICPC (2013): Participated in the ICPC contest when I was an undergraduate and eventually advanced to the Asia Regional Contest Beijing Area and won Silver</p> <p>(6) Beijing Android development contest (2013): Participated in the Android development contest held in Beijing and won first place</p> <p>(7) Language level: Japanese (Japanese Proficiency Test Level 1), English (TOEFL-iBT: 113/120), Chinese (native)</p>
Programming experience
<p>Programming Language (Mostly used): C/C++, python, CUDA</p> <p>Programming Language (Moderate): GO, NodeJS</p> <p>Programming Language (Occasionally Used): Rust, Haskell, Coq</p> <p>Others: PyTorch, Darknet, TensorRT, LLVM</p>