Michio Honda

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INTERESTS	**Operating Systems, Networking, Distributed Systems, Machine Learning**

EDUCATION

Keio University, Tokyo Japan

Ph.D. in Graduate School of Media and Governance — Apr 2009 – Mar 2012
Program: Cyber Informatics
Thesis: The Internet is not an Internet—Principles, Evasion and Implications for Transport Protocols

M.S. in Graduate School of Media and Governance — Apr 2007 – Mar 2009
Program: Cyber Informatics
Thesis: Bidimensional-Probe Multipath Congestion Control for Shared Bottleneck Fairness

B.S. in Faculty of Environment and Information Studies — Apr 2003 – Mar 2007
Thesis: Fast Transport Layer Handover Using Single Wireless Interface

WORK EXPERIENCE

Lecturer, School of Informatics, The University of Edinburgh, UK	Jan 2020 – present
Senior research scientist, NEC Laboratories Europe, Heidelberg, Germany	Nov 2016 – Dec 2019
Software engineer, NetApp, Munich, Germany	Dec 2014 – Oct 2016
Research scientist, NEC Laboratories Europe, Heidelberg, Germany	Jul 2012 – Nov 2014
Part-time lecturer, Keio University, Japan	Apr 2011 – Mar 2012

RESEARCH EXPERIENCE

Visiting student researcher, University College London (UCL), London, UK — Apr 2010 – Sep 2010
Advisor: Prof. Mark Handley
Focus: Middlebox, Multipath Transport Protocol.

Research intern, Nokia Research Center, Espoo, Finland — Jul 2008 – Jan 2009
Advisor: Dr. Lars Eggert
Focus: Multipath Transport Protocol.

AWARDS

Best paper award, ACM SOSR'15	Jun 2015
Community award, USENIX NSDI'12	Apr 2012
Applied Networking Research Prize (ANRP), 82th IETF meeting	Nov 2011

RECENT RESEARCH

GrepStore: Scalable Graph Representation Learning — Poster at OSDI'18
GrepStore aims for enabling graph representation learning that learns representation of graph structured data at scale. In particular, it explores system architecture that efficiently handles graph data that do not fit in the main memory, and parallelize and distribute computes by exploiting opportunities in modern graph representation learning algorithms.

PASTE: A Network Stack for Non-Volatile Main Memory — NSDI'18, HotNets'16, ATC'16
PASTE is a network stack that offers unified abstractions of network and non-volatile main memory. It fills the gap between the storage and network stacks designed in isolation, and solves the problem with the costs of moving and transforming data between these stacks that are significant for non-volatile main memory that offers fast, byte-addressable persistence.

mSwitch: A Highly-Scalable, Modular Software Switch — SOSR'15, CCR'14, NSDI'14, SoCC'17
mSwitch solves the scalability problem of existing software switches that is crucial to consolidate a large number of VMs or virtualized network functions by a novel packet forwarding algorithm and streamlined data path. It was initially designed for ClickOS, a tiny unikernel that runs Click, and MultiStack, a framework that runs multiple user-space network stacks.

Middlebox Measurement for TCP Extensibility — IMC'11, NSDI'12
This work was motivated by exploring viable design of Multipath TCP. It transmits various non-existent TCP traffic that mimics possible future TCP extensions to our server and examines on-path actions to the packets. This is the first work that examines in-depth middlebox behaviour prevalent in the Internet.

PUBLICATIONS

Maurice Bailleu, Jörg Thalheim, Pramod Bhatotia, Christof Fetzer, **Michio Honda** and Kapil Vaswani, *"Speicher:Securing LSM-based Key-Value Stores using Shielded Execution"*, USENIX Conference on File and Storage Technologies (**FAST**), Feb 2019.

Salvatore Pontarelli, Roberto Bifulco, Marco Bonola, Carmelo Cascone, Marco Spaziani, Valerio Bruschi, Davide Sanvito, Giuseppe Siracusano, Antonio Capone, **Michio Honda**, Felipe Huici and Giuseppe Bianchi, *"FlowBlaze: Stateful Packet Processing in Hardware"*, USENIX Symposium on Networked Systems Design and Implementation (**NSDI**), Feb 2019.

Michio Honda, Giuseppe Lettieri, Lars Eggert and Douglas Santry, *"PASTE: A Network Programming Interface for Non-Volatile Main Memory"*, USENIX Symposium on Networked Systems Design and Implementation (**NSDI**), Apr 2018.

Kenichi Yasukata, Felipe Huici, Vincenzo Maffione, Giuseppe Lettieri and **Michio Honda**, *"HyperNF: Building a High Performance, High Utilization and Fair NFV Platform"*, ACM Symposium on Cloud Computing (**SoCC**), Sep 2017.

Simon Kuenzer, Anton Ivanov, Filipe, Manco, Jose Mendes, Yuri Volchkov, Florian Schmidt, Kenichi Yasukata, **Michio Honda** and Felipe Huici, *"Unikernels Everywhere: The Case for Elastic CDNs"*, ACM International Conference on Virtual Execution Environments (**VEE**), Apr 2017.

Michio Honda, Lars Eggert and Douglas Santry, *"PASTE: Network Stacks Must Integrate with NVMM Abstractions"*, ACM Workshop on Hot Topics in Networks (**HotNets**), Nov 2016.

Kenichi Yasukata, **Michio Honda**, Douglas Santry and Lars Eggert, *"StackMap: Low-Latency Networking with the OS Stack and Dedicated NICs"*, USENIX Annual Technical Conference (**ATC**), Jun 2016.

Michio Honda, Felipe Huici, Giuseppe Lettieri and Luigi Rizzo, *"mSwitch: A Highly-Scalable, Modular Software Switch"*, ACM SIGCOMM Symposium on SDN Research (**SOSR**), Jun 2015. **Best paper award**

Michio Honda, Felipe Huici, Costin Raiciu, Joao Araujo and Luigi Rizzo, *"Rekindling Network Protocol Innovation with User-Level Stacks"*, ACM SIGCOMM Computer Communication Review (**CCR**), Apr 2014.

Joao Martins, Mohamed Ahmed, Costin Raiciu, Vladimir Olteanu, **Michio Honda**, Roberto Bifulco and Felipe Huici, *"ClickOS and the Art of Network Function Virtualization"*, USENIX Symposium on Networked Systems Design and Implementation (**NSDI**), Apr 2014.

Costin Raiciu, Christoph Paasch, Sebastien Barre, Alan Ford, **Michio Honda**, Fabien Duchene, Olivier Bonaventure and Mark Handley, *"How Hard Can It Be? Designing and Implementing a Deployable Multipath TCP"*, USENIX Symposium on Networked Systems Design and Implementation (**NSDI**), Apr 2012. **Community Award**

Michio Honda, Yoshifumi Nishida, Costin Raiciu, Adam Greenhalgh, Mark Handley and Hideyuki Tokuda, *"Is it Still Possible to Extend TCP?"* ACM Internet Measurement Conference (**IMC**), Nov 2011. **Applied Networking Research Prize**

Michio Honda, Yoshifumi Nishida, Pasi Sarolahti and Lars Eggert, *"Multipath Congestion Control for Shared Bottleneck"* International Workshop on Protocols for Future, Large-Scale & Diverse Network Transports (**PFLDNeT**), May 2008.

Michio Honda, Jin Nakazawa, Yoshifumi Nishida, Masahiro Kozuka and Hideyuki Tokuda, *"A Connectivity-Driven Retransmission Scheme Based On Transport Layer Readdressing"*, IEEE International Conference on Distributed Computing Systems (**ICDCS**), Jun 2008.

POSTERS	**Michio Honda** and Mathias Niepert, *"GrepStore: Scaling Graph Representation Learning"*, USENIX Symposium on Operating System Design and Implementation (OSDI), Oct 2018.
	Michio Honda, Felipe Huici and Luigi Rizzo, *"MiniStack: Operating System Support for Fast User-space Network Protocols"*, USENIX Symposium on Operating System Design and Implementation (OSDI), Oct 2012.

SERVICE	**USENIX ATC, Program Committee**	2017, 2018 and 2020
	ACM/IEEE SC, Program Committee	2019
	ACM/IEEE ANCS, Program Committee	2018
	ACM SOSR, Program Committee	2018
	ACM EuroDW, Program Committee	2018
	ACM/IEEE ToN, Reviewer	2017–2018
	ACM SOSP poster, Program Committee	2013

TEACHING	**Data Structures and Programming**, Keio University	Fall 2011
	Fundamentals of Information Technology, Keio University	Spring 2011

STUDENT MENTORING	Yutaro Hayakawa, Master Thesis, Keio University	Fall 2018
	Nanako Momiyama, Bachelor Thesis, Keio University	Fall 2016
	Yutaro Hayakawa, Bachelor Thesis, Keio University	Fall 2016
	Kenichi Yasukata, Master Thesis, Keio University	Fall 2015

GRANTS

Research Fellowship for Young Scientists (DC1)   Apr 2009 – Mar 2012
Japan Society for the Promotion of Science, 9.2M JPY

Excellent Young Researcher Overseas Visit Program   Apr 2010
Japan Society for the Promotion of Science, 1M JPY

Young Leader Scholarship   Apr 2009
Keio University, 1M JPY

R&D COLLABORATIONS

Fed4IoT (H2020 No. 814918)   Jul 2018 – present
The Federation for IoT (Fed4IoT) project aims at integrating heterogeneous IoT platforms and devices by virtualizing resources at multiple levels, including devices, platforms and information. Project volume is € 3 million in total.

SSICLOPS (H2020 No. 644866)   Feb 2014 – Jan 2018
The Scalable and Secure Infrastructures for Cloud Operations (SSICLOPS) focuses on cloud networking techniques in software-defined data centers and across wide-area networks. Project volume is € 7 million.

OPEN SOURCE CONTRIBUTION

PASTE		https://micchie.github.io/paste/
netmap	mSwitch and various features	https://github.com/luigirizzo/netmap
MultiStack		https://github.com/sysml/multistack
Linux kernel	SCTP extensions	https://www.kernel.org/
FreeBSD kernel	mSwitch and SCTP extensions	https://www.freebsd.org/

REFERENCES

Prof. Luigi Rizzo   Università di Pisa and Google
Dr. Lars Eggert   NetApp
Prof. Mark Handley   University College London

[*CV compiled on 2020-04-02*]