Ashwin Jha

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Stuhlsatzenhaus 5, 66123 Saarbrücken, Germany

Nationality: India
Residency: Germany
Date of Birth: 21 July, 1991

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Research Interests

Primarily in cryptography, with a special focus on the *provable security of symmetric-key schemes* both in classical and quantum settings.

Education

Doctor of Philosophy in Computer Science July, 2015 – June, 2020
Indian Statistical Institute Kolkata, India
Dissertation: Provable Security of Symmetric-key Cryptographic Schemes
Advisor: Prof. Mridul Nandi

Master of Technology in Computer Science July 2013 – July 2015
Indian Statistical Institute Kolkata, India
Dissertation: Cryptanalysis of Iterated Hash and Its Variants
First class *with Honours* (Aggregate: 78%), *Best Dissertation Award*
Advisor: Prof. Mridul Nandi

Bachelor of Engineering in Computer August 2008 – June 2012
Delhi College of Engineering, University of Delhi Delhi, India
First class (Aggregate: 67%)

Research Experience

Postdoctoral Researcher January, 2021 – present
CISPA Helmholtz Center for Information Security Saarbrücken, Germany
Design and analysis of symmetric-key modes of operations.

Visiting Scientist July 2020 – December 2020
R. C. Bose Centre for Cryptology and Security
Indian Statistical Institute Kolkata, India
Design and analysis of lightweight authenticated encryption modes.

Research Intern January 2018 – March 2018
Fujitsu Laboratories of America Sunnyvale, USA
Cryptanalysis of pseudorandom functions using quantum query access.

Research Intern August 2017 – October 2017
NTT Secure Platform Laboratories Tokyo, Japan
Provable security of tweakable block cipher based modes of operation.

Research Fellow July 2015 – June 2020
Applied Statistics Unit
Indian Statistical Institute Kolkata, India
Provable security of symmetric-key modes of operations.

Teaching/Mentoring Experience

Master's Thesis Supervision Summer Internship [M. Tech. (CrS) IV]
Indian Statistical Institute Kolkata, India Spring 2022
(work carried out at CISPA Helmholtz Center for Information Security, Germany)

Co-instructor Advanced Cryptology [M. Tech. (CrS) III]
Indian Statistical Institute Kolkata, India Autumn 2020

Co-instructor Cryptology [M. Tech. (CS) III]
Indian Statistical Institute Kolkata, India Autumn 2018

Teaching Assistant Computing Systems I [M. Tech. (CrS) I]
Indian Statistical Institute Kolkata, India Autumn 2018

Teaching Assistant Data and File Structures Lab. [M. Tech. (CS) I]
Indian Statistical Institute Kolkata, India Autumn 2015

Seminars and Workshops

Dagstuhl Seminar on Symmetric Cryptography 2022

Lorentz Center Workshop on Flexible Symmetric Cryptography 2018

Asian Workshop on Symmetric Key Cryptography 2015, 2016, 2018

Reviewing Services

Editorial Board Membership: FSE 2024/ToSC 2023–2024, CANS 2023
FSE 2023/ToSC 2022–2023, CANS 2022

Journal Reviewing: Springer DCC, IET Information Security, IEEE IT

External Reviewing: CRYPTO, EUROCRYPT, ASIACRYPT, FSE

Fellowships and Awards

Winner of Lightweight Crypto Challenge (DSCI and Govt. of India) 2021

Suniti Kumar Pal Gold Medal (ISI Kolkata) 2015

Google Summer of Code Fellowship (Google) 2014

Industry Experience

Google Summer of Code 2014 Intern April 2014 – August 2017
Eclipse Foundation

Software Engineer June 2012 – July 2013
Algoworks Technologies Noida, India

Software Intern May 2011 – July 2011
ESQ Management Solutions Inc. Noida, India

References

Prof. Mridul Nandi mridul@isical.ac.in
Indian Statistical Institute Kolkata, India

Dr. Benoît Cogliati benoit.cogliati@gmail.com
Thales DIS France SAS Meudon, France

Dr. Bart Mennink b.mennink@cs.ru.nl
Radboud University Nijmegen, Netherlands

Dr. Yu Sasaki yu.sasaki.sk@hco.ntt.co.jp
NTT Secure Platform Laboratories Tokyo, Japan

Dr. Kan Yasuda kan.yasuda.hy@hco.ntt.co.jp
NTT Secure Platform Laboratories Tokyo, Japan

Prof. Shay Gueron shay@math.haifa.ac.il
University of Haifa Haifa, Israel

Publications*

R. Bhaumik, B. Cogliati, J. Ethan, A. Jha: *On Quantum Secure Compressing Pseudorandom Functions.* IACR Cryptology ePrint Archive 2023(207), 2023.

R. Bhaumik, A. Gunsing, A. Jha, B. Mennink, Y. Shen: *Revisiting the Indifferentiability of the Sum of Permutations.* IACR CRYPTO 2023, 2023.

B. Cogliati, J. Ethan, A. Jha: *Subverting Telegram's End-to-End Encryption.* IACR Trans. Symmetric Cryptol. 2023(1), 2023.

S. Chattopadhyay, A. Jha, M. Nandi: *Towards Tight Security Bounds for OMAC, XCBC and TMAC.* IACR ASIACRYPT 2022, 2022.

A. Jha, M. Nandi: *A Survey on Applications of H-Technique: Revisiting Security Analysis of PRP and PRF.* Entropy 24(4): 462, 2022.

S. Chattopadhyay, A. Jha, M. Nandi: *Fine-Tuning the ISO/IEC Standard LightMAC.* IACR ASIACRYPT 2021(Part 3): 490–519, 2021.

S. Gueron, A. Jha, M. Nandi: *Revisiting the Security of COMET Authenticated Encryption Scheme.* INDOCRYPT 2021: 3–25, 2021.

A. Chakraborti, N. Datta, A. Jha, C. Mancillas-López, M. Nandi: *tHyENA: Making HyENA Even Smaller.* INDOCRYPT 2021: 26–48, 2021

A. Chakraborti, N. Datta, A. Jha, C. Mancillas-López, M. Nandi, Y. Sasaki: *Elastic-Tweak: A Framework for Short Tweak Tweakable Block Cipher.* INDOCRYPT 2021: 114-137, 2021.

A. Chakraborti, N. Datta, A. Jha, C. Mancillas-López, M. Nandi: *Light-OCB: Parallel Lightweight Authenticated Cipher with Full Security.* SPACE 2021: 22-41, 2021.

B. Chakraborty, S. Chattopadhyay, A. Jha, M. Nandi: *On Length Independent Security Bounds for the PMAC Family.* IACR Trans. Symmetric Cryptol. 2021(2): 423–445, 2021.

B. Cogliati, A. Jha and M. Nandi: *How to Build Optimally Secure PRFs Using Block Ciphers.* IACR ASIACRYPT 2020(Part I): 754–784, 2020.

A. Jha and M. Nandi: *Tight Security of Cascaded LRW2.* J. Cryptology 33(3): 1272–1317, 2020.

B. Chakraborty, A. Jha and M. Nandi: *On the Security of Sponge-type Authenticated Encryption Modes.* IACR Trans. Symmetric Cryptol. 2020(2): 93–119, 2020.

A. Chakraborti, N. Datta, A. Jha, S. Mitragotri and M. Nandi: *From Combined to Hybrid: Making Feedback-based AE even Smaller.* IACR Trans. Symmetric Cryptol. 2020(S1): 417–445, 2020.

A. Chakraborti, N. Datta, A. Jha, C. Mancillas-López, M. Nandi and Y. Sasaki: *ESTATE: A Lightweight and Low Energy Authenticated Encryption Mode.* IACR Trans. Symmetric Cryptol. 2020(S1): 350–389, 2020.

A. Chakraborti, N. Datta, A. Jha, C. Mancillas-López, M. Nandi and Y. Sasaki: *INT-RUP Secure Lightweight Parallel AE Modes.* IACR Trans. Symmetric Cryptol. 2019(4): 81–118, 2019.

A. Jha, C. Mancillas-López, M. Nandi and S. Sen Gupta: *On Random Read Access in OCB.* IEEE Trans. Information Theory 65(12): 8325–8344, 2019.

A. Jha and M. Nandi: *On Rate-1 and Beyond-the-Birthday Bound Secure Online Ciphers using Tweakable Block Ciphers.* Cryptography and Communications 10(5): 731–753, 2018.

A. Jha, E. List, K. Minematsu, S. Mishra and M. Nandi: *XHX - A Framework for Optimally Secure Tweakable Block Ciphers from Classical Block Ciphers and Universal Hashing*. LATINCRYPT 2017: 207–227, 2017.

A. Dutta, A. Jha and M. Nandi: *A New Look at Counters: Don't Run Like Marathon in a Hundred Meter Race*. IEEE Trans. Computers 66(11): 1851–1864, 2017.

A. Dutta, A. Jha and M. Nandi: *Tight Security Analysis of EHtM MAC*. IACR Trans. Symmetric Cryptol. 2017(3): 130–150, 2017.

A. Jha, A. Mandal and M. Nandi: *On The Exact Security of Message Authentication Using Pseudorandom Functions*. IACR Trans. Symmetric Cryptol. 2017(1): 427–448, 2017.

A. Jha and M. Nandi: *Revisiting Structure Graphs: Applications to CBC-MAC and EMAC*. J. Mathematical Cryptology. 10(3–4): 157–180, 2016.

* A comprehensive list is available on DBLP.