An overview of

Theoretical Computer Science Cluster at IISc "Theory Club"

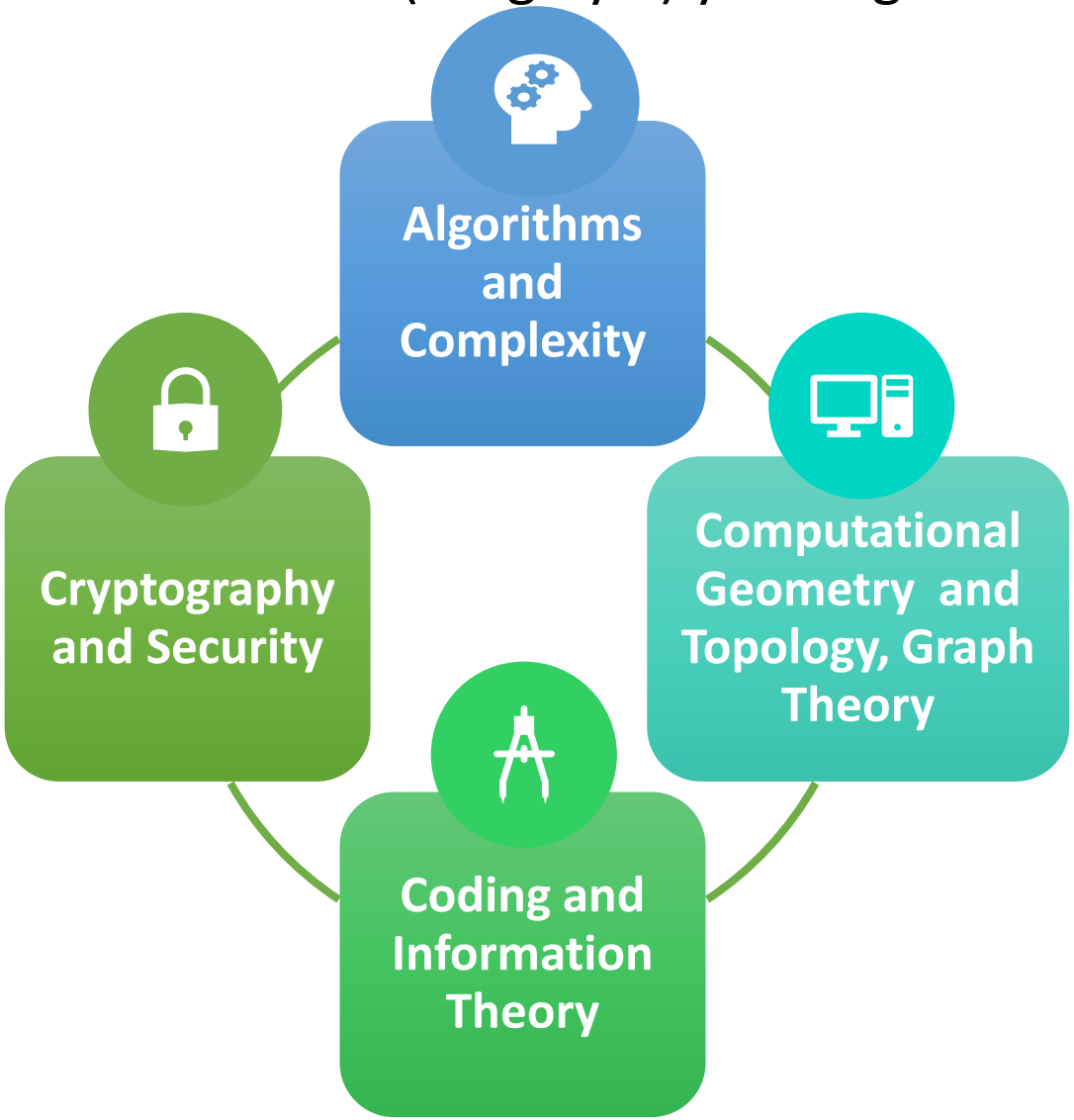
Arpita Patra, CSA

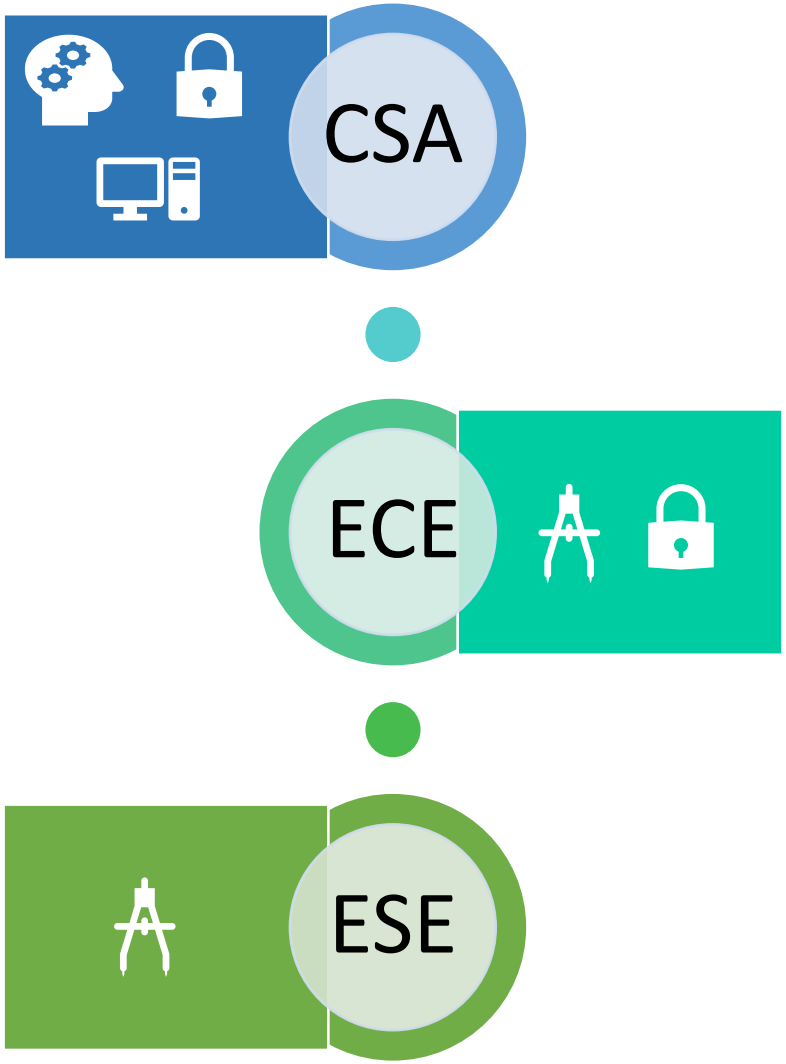
Indian Institute of Science

YRM 2020

Genesis and Primary Areas

Conceived a few (roughly 3) years ago and cuts across 3 departments under EECS Division.





Algorithms and Complexity

CSA

7: Anand, Arindam, Chandan, Rahul, Siddharth, Ravi (adjunct), Ramesh (adjunct)

Approximation, online, streaming, geometric algorithms, Algorithmic Game theory, Computational Complexity and Algebra, Number Theory

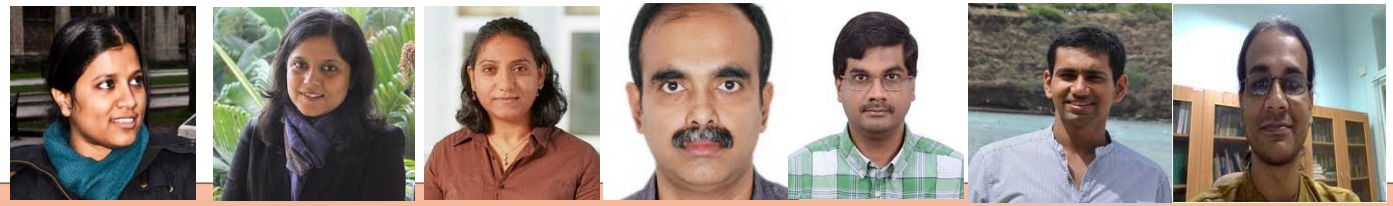
FOCS, STOC, SODA, ICALP, CCC, MFCS, STACS, ESA, SIAM Journal of Computing, AAAI

ACM Fellow (1), Knuth Prize (1), Fulkerson Prize(1), INAE Young Engineer(2), IAS Associateship(1), Ramanujan Fellowship(1), SERB Early Career Award (1). Strand Life Sciences/**Simputer.**

FOCS'20, MFCS'20(3), CCC(1), EC(2), IJCAI(1)! IBM Student Fellowship! ICALP Best paper award 2018! Indo-US Virtual Knowledge Center 2020!

Cryptography and Security

CSA ECE



7: Arpita, Bhavana, Chaya, Sanjit, Vinod, Himanshu, Navin (Security, AI/ML)

Multi-party Computation (theory and applications to PPML), Agreement protocols, Non-malleable Codes, Zero-knowledge, Various Encryption Schemes, Post-quantum crypto, Information-theoretic Security

FOCS, CRYPTO, EUROCRYPT, ASIACRYPT, TCC, PODC, ACM CCS, NDSS, J of ACM, J. of Cryptology, IEEE Transactions of Information Theory, Distributed Computing

INAE Young Engineer Award (1), TWAS + IAS Associateship (1), SERB Women Excellence Award (1), Google AI/ML Research Award (1), NASI Young Scientist Platinum Jubilee Award (1), IBM Faculty Award (1).

FOCS'20, NDSS'20, J. of ACM'20, ICALP'20! Google Fellowship, TCS Fellowship, Heidelberg Nobel Laurate Forum, Women in Theory. International Workshops on Multi-party Computation 2020, Information-theoretic security.

Computational Geometry/Topology, Graph Theory

CSA

4: Rahul, Sathish, Sunil, Vijay

Scientific Visualization, Computational and Combinatorial Geometry, Combinatorial Optimizations, Various topics in Graph theory

Symposium on Computational Geometry (SoCG), ESA, COCOON, Computational Geometry : Theory and Applications, ITCS, SIAM Journal of Discrete mathematics, Algorithmica, Europian Journal of Discrete Mathematics, Discrete Mathematics.

INAE Fellowship (2), Swarnajayanti Fellowship (1), INAE Young Engineer Award (2), INSA Medal for Young Scientist (2),NASI Young Scientist Platinum Jubilee Award (1), Humboldt Fellowship (2). Startup: Mimyk

Alumni Medal for Best PhD Thesis in CSA, IISc (2015-2016); IBM Outstanding Ph.D. Thesis Award, 2016

Coding & Information Theory

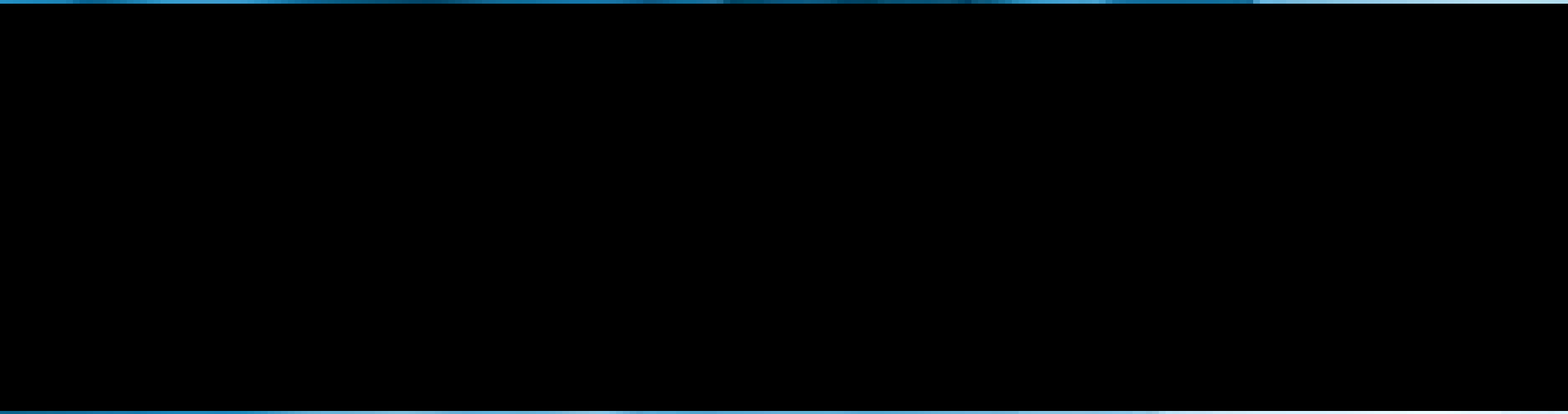
ECE ESE

7: Coding: Navin, Shayan, Sundar, Vijay K; Information: Himanshu, Navin, Rajesh, Shayan, Vinod S

Various codes (Error-correcting, for distributed storage, network, locally testable, decodable codes), Shannon Theory,

ISIT, SODA, COLT, AISTATS, ICML, IEEE Transactions on Information theory, ICASSP, Allerton

Fellow of INAE, INSA, IAS, J. C. Bose Fellowship, Swarnajayanti Fellowship

Best paper award at ICASSP, ISIT

Areas we look forward to hire