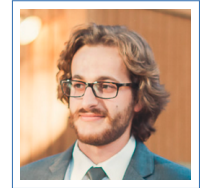# Clayton Schoeny

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Education

2014–Current   **Ph.D. Electrical Engineering**, *University of California, Los Angeles (UCLA)*.
- Advanced to Doctoral Candidacy: May 23, 2016
- Graduate Student Researcher: Laboratory for Robust Information Systems (LORIS)
- GPA: 4.0

2012–2014   **M.S. Electrical Engineering**, *University of California, Los Angeles (UCLA)*.
- Master's Thesis: *Efficient File Synchronization*
- Graduate Student Researcher: Laboratory for Robust Information Systems (LORIS)
- Focus: Communication Systems

2007–2012   **B.S. Electrical Engineering**, *University of California, Los Angeles (UCLA)*.
- Minor: Mathematics
- Senior Design Project: Interactive Speech Recognition
- Latin Honors: *Cum Laude*

Honors & Awards

2016–2017   Qualcomm Innovation Fellowship Winner
  –$50000 Fellowship, 2016–2017 Academic Year

2016   Best Paper Award: IEEE Workshop on Silicon Errors in Logic – System Effects

2015–2016   Qualcomm Innovation Fellowship Finalist

2014–2015   Henry Samueli Excellence in Teaching Award
  –Teaching Assistant: Spring 2015 EE132A Introduction to Communication Systems

Industry Experience

Jun-Sep 2015   **Space and Naval Warfare Systems Command (SPAWAR)**, *Point Loma, CA*.
Naval Research Enterprise Internship—Command and Control

Jun-Sep 2013
Apr-Sep 2012   **DIRECTV**, *El Segundo, CA*.
Internship—Space and Communications, Video Systems Engineering

Jun-Nov 2011
Jun-Sep 2010   **The Aerospace Corporation**, *El Segundo, CA*.
Internship—Communication Systems Engineering Department

Research Interests

- Coding theoretic methods for next-generation storage systems.
- Statistical algorithms for large-scale data managemnet.

Publications and Talks

Journal Articles

2017   1.   **C. Schoeny**, A. Wachter-Zeh, R. Gabrys, E. Yaakobi, "Codes correcting a burst of deletions or insertions," *IEEE Transactions on Information Theory* (in press). doi:10.1109/TIT.2017.2661747.

2017   2. F. Sala, R. Gabrys **C. Schoeny**, L. Dolecek, "Exact reconstruction from insertions in synchronization codes," *IEEE Transactions on Information Theory* (in press). doi:10.1109/TIT.2017.2649493.

2017   3. F. Sala, **C. Schoeny**, S. Kabir, D. Divsalar, L. Dolecek, "On nonuniform noisy decoding for LDPC codes with application to radiation-induced errors," *IEEE Transactions on Communications* (in press). doi:10.1109/TCOMM.2017.2657759.

2016   4. F. Sala, **C. Schoeny**, N. Bitouze, L. Dolecek, "Synchronizing files under a large number of edits," *IEEE Transactions on Communications*, vol. 64, no. 6, pp. 2258 - 2273, Jun. 2016.

Conference Publications

2016   5. F. Sala, **C. Schoeny**, S. Kabir, D. Divsalar, L. Dolecek*, "Flash memories in high radiation environments: LDPC decoder study," in *Proc. IEEE Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, Nov. 2016.

2016   6. A. Reisizadehmobarakeh, **C. Schoeny**, C.-Y. Tsai, L. Dolecek*, "Approximate file synchronization: upper bounds and interactive algorithms," in *Proc. IEEE Inf. Theory Workshop (ITW)*, Cambridge, UK, Sep. 2016.

2016   7. **C. Schoeny***, A. Wachter-Zeh, R. Gabrys, E. Yaakobi, "Codes correcting a burst of deletions or insertions," in *Proc. IEEE Int. Symp. Inf. Theory (ISIT)*, Barcelona, Spain Jul. 2016.

2016   8. A. Hareedy*, C. Lanka, **C. Schoeny**, L. Dolecek, "The weight consistency matrix framework for general non-binary LDPC code optimization: applications in Flash memories," in *Proc. IEEE Int. Symp. Inf. Theory (ISIT)*, Barcelona, Spain Jul. 2016.

2016   9. F. Sala*, R. Gabrys, **C. Schoeny**, K. Mazooji, L. Dolecek, "Exact sequence reconstruction for insertion-correcting codes," in *Proc. IEEE Int. Symp. Inf. Theory (ISIT)*, Barcelona, Spain Jul. 2016.

2016   10. M. Gottscho*, **C. Schoeny**, L. Dolecek, P. Gupta, "Software-Defined error-correcting codes," in *Proc IEEE/IFIP Int. Conf. on Dependable Systems and Networks (DSN)*, Toulouse, France, Jun.-Jul. 2016.

2016   11. P. Schläfer*, C. Huang, **C. Schoeny**, C. Weis, Y. Li, N. Wehn, L. Dolecek, "Error resilience and rnergy rfficiency: an LDPC decoder design study," in *Proc. IEEE Design, Automation & Test in Europe (DATE)*, Dresden, Germany, Mar. 2016.

2015   12. F. Sala*, **C. Schoeny**, D. Divsalar, L. Dolecek, "Asymmetric ECCs for Flash in high-radiation environments," in *Proc. IEEE Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, Nov. 2015.

2015   13. **C. Schoeny***, F. Sala, L. Dolecek, "Analysis and coding schemes for the Flash normal-Laplace mixture channel," in *Proc. IEEE Int. Symp. Inf. Theory (ISIT)*, Hong Kong, Jun. 2015.

2015   14. F. Sala*, **C. Schoeny**, D. Divsalar, L. Dolecek, "Asymmetric error-correcting codes for Flash memories in high-radiation environments," in *Proc. IEEE Int. Symp. Inf. Theory (ISIT)*, Hong Kong, Jun. 2015.

2015   15. F. Sala*, R. Gabrys, **C. Schoeny**, L. Dolecek, "Three novel combinatorial theorems for the insertion/deletion channel," in *Proc. IEEE Int. Symp. Inf. Theory (ISIT)*, Hong Kong, Jun. 2015.

2014   16. **C. Schoeny***, N. Bitouze, F. Sala, L. Dolecek, "Efficient File Synchronization: Extensions and Simulations," in *Proc. IEEE Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, Nov. 2014.

Book Chapters

2016   17. F. Sala, **C. Schoeny**, L. Dolecek, "Advanced algebraic and graph-based ECC schemes for Flash memories," in *3D Flash Memories*, Rino Micheloni, Ed. Springer, 2016, pp. 321 − 348.

Workshop Talks

2016   18. F. Sala, **C. Schoeny**, L. Dolecek*, "Approximate and noisy computing: connections to the information-theory world," *Workshop on Approximate Computing Across the Stack (WAX)*, Atlanta, GA, Apr. 2016.

2016   19. M. Gottscho*, **C. Schoeny**, L. Dolecek, P. Gupta, "Software-Defined error-correcting codes," *IEEE Workshop on Silicon Errors in Logic - System Effects (SELSE)*, Austin, TX, Mar. 2016 (Best paper award).

2016   20. F. Sala, **C. Schoeny***, D. Divsalar, L. Dolecek, "Error-Correcting codes for radiation-induced error patterns in Flash memories," *Non-Volatile Memories Workshop (NVMW)*, San Diego, CA, Mar. 2016.

2016   21. **C. Schoeny***, M. Gottscho*, "Software-Defined Error-Correcting Codes," *Qualcomm Innovation Fellowship Finalists Presentation*, San Diego, CA, Mar. 2016.

2016   22. **C. Schoeny***, F. Sala, L. Dolecek, "Coding for the limited permutation channel," *UCLA Electrical Engineering Annual Research Review (ARR)*, Los Angeles, CA, Feb. 2016.

2015   23. **C. Schoeny***, F. Sala*, "Coding techniques for next-generation 3-D Flash memories," *Qualcomm Innovation Fellowship Finalists Presentation*, San Diego, CA, Mar. 2015.

2015   24. **C. Schoeny***, B. Amiri, A. Hareedy, L. Dolecek, "Quasi-Cyclic non-binary LDPC codes for MLC NAND Flash memory," *Non-Volatile Memories Workshop (NVMW)*, San Diego, CA, Mar. 2015.

Poster Presentations

2016 25. D. Divsalar, L. Dolecek, M. Cheng, F. Sala, **C. Schoeny**, S. Kabir, "Breaking the limitations of radiation-hardened devices," *JPL Research Poster Conference*, Pasadena, CA, Nov. 2016.

2015 26. **C. Schoeny**, N. Bitouze, F. Sala, L. Dolecek, "Synchronizing files under a large number of edits," *UCLA Electrical Engineering Annual Research Review (ARR)*, Los Angeles, CA, Feb. 2015.

2014 27. **C. Schoeny**, L. Dolecek, "Non-Binary LDPC codes for MLC NAND Flash memory", *Flash Memory Summit*, San Jose, CA, Aug. 2014.

Professional Services – Peer-Reviewer

2016–2017 IEEE Transactions on Information Theory

2016–2017 IEEE International Symposium on Information Theory (ISIT)

2015–2017 IEEE Transactions on Communications

Computer skills

Adept C++, MATLAB, LaTeX, Excel

Experienced C, R, Python, UNIX, Visio

Leadership and Activities

HKN Workshop Chair, Mentorship Chair, Senior Advisor

Membership IEEE, Engineering Society of UCLA

Tutoring Math, Physics, Engineering

Martial Arts Muay Thai, Tae Kwon Do, Capoeira, Brazilian Jiu-Jitsu

Relevant Courses

Electrical Engineering	**Mathematics**
Information Theory	Probability Theory
Channel Coding Theory	Stochastic Processes
Graphs and Network Flows	Game Theory
Inference on Graphs	Statistics
Telecommunication Networks	Linear Algebra
Logic Design of Digital Systems	Multivariable Calculus
Digital Signal Processing	Linear Programming
Digital Communication Systems	Complex Analysis
Principles of Feedback Control	Matrix Analysis
Modern Data Storage Systems	Applied Numerical Computing