

# Stanford

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## Itschak Weissman

Professor of Electrical Engineering

 Curriculum Vitae available Online

### CONTACT INFORMATION

- **Alternate Contact**

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### Bio

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#### BIO

Tsachy's research focuses on Information Theory, Data Compression and Communications, Statistical Signal Processing, Machine Learning, the interplay between them, and their applications, with recent focus on applications to genomic data compression and processing. He is inventor of several patents and involved in several companies as member of the technical board. IEEE fellow, he serves on the board of governors of the information theory society as well as the editorial boards of the Transactions on Information Theory and Foundations and Trends in Communications and Information Theory. He is founding Director of the Stanford Compression Forum.

#### ACADEMIC APPOINTMENTS

- Professor, Electrical Engineering
- Member, Bio-X
- Member, Wu Tsai Neurosciences Institute

#### ADMINISTRATIVE APPOINTMENTS

- Founder/Director, Stanford Compression Forum, (2015- present)
- Academic Affairs Committee, Stanford University, (2013-2018)
- Graduate Admissions Committee, Stanford University, (2004-2012)

#### HONORS AND AWARDS

- Google Research Award, Google (2016)
- Yahoo! Faculty Research Award, Yahoo! (2015)
- Google Research Award, Google (2013)
- Yahoo! Faculty Research And Engagement Award, Yahoo! (2013)
- IEEE Fellow Grade, IEEE (2012)
- Google Research Award, Google (2011)
- STMicroelectronics Faculty Scholar Award, Stanford University (2011)

## **BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS**

- Guest Editor, Proceedings of IEEE (2017 - 2017)
- Organizer/Technical Program Committee, IEEE (ITW) (2015 - 2015)
- Technical Program Committee, IEEE (ISIT) (2015 - 2015)
- Technical Program Committee, IEEE (ISIT) (2014 - 2014)
- Editorial Board, Foundations and Trends in Communications and Information Theory (2012 - present)
- Fellow, IEEE (2012 - present)
- Technical Program Committee, IEEE (ISIT) (2012 - 2012)
- Technical Program Committee, IEEE (ISIT) (2011 - 2011)
- Editorial Board, Transactions on Information Theory Associate Editor for Shannon Theory (2010 - present)
- Organizer/Technical Program Committee, IEEE (ITW) (2010 - 2010)
- Paper Award Committee, IEEE (2009 - 2009)
- Technical Program Committee, Data Compression Conference (DCC) (2009 - 2009)
- Technical Program Committee, IEEE International Symposium on Information Theory (ISIT) (2009 - 2009)
- Technical Program Committee, Control Over Communication Channels Workshop (ConCom) (2009 - 2009)
- Technical Program Committee, DCC (Data Compression Conference) (2008 - 2008)
- Technical Program Committee, IAPR Workshop on Cognitive Information Processing (CIP) (2008 - 2008)
- Technical Program Committee, IEEE (ISIT) (2007 - 2007)
- Member, The Mathematical Association of America (MAA) (2006 - present)
- Panelist, Allerton Conference (2006 - 2006)
- Technical Program Committee, IEEE (ISIT) (2005 - 2005)

## **PROFESSIONAL EDUCATION**

- PhD, Technion-Israel Institute of Technology , Electrical Engineering (2001)
- B.Sc., Technion-Israel Institute of Technology , Electrical Engineering (1997)

## **PATENTS**

- Itschak Weissman. "United States Patent US8320687 Universal Lossy Compression Methods", Nov 27, 2012
- Itschak Weissman. "United States Patent US200404580 Denoising and Error Correction for Finite Input General Output Channel", May 10, 2012
- Itschak Weissman. "United States Patent US7624009 Method and System for Producing Variable Length Context Models", Nov 24, 2009
- Itschak Weissman. "United States Patent US7498961 Context Identification Using a Denoised Signal", Mar 3, 2009
- Itschak Weissman. "United States Patent US7474793 Methods for Compression Using a Denoiser", Jan 6, 2009
- Itschak Weissman. "United States Patent EP1766832 Discrete Universal Denoising with Error Correction Coding", Dec 10, 2008
- Itschak Weissman. "United States Patent US7436969 Method and System for Optimizing Denoising Parameters Using Compressibility", Oct 14, 2008
- Itschak Weissman. "United States Patent US7433427 Enhanced Denoising System Utilizing Incremental Parsing", Oct 7, 2008
- Itschak Weissman. "United States Patent US7420487 Denoising Video", Sep 2, 2008
- Itschak Weissman. "United States Patent US7271749 Context-based Denoiser That Simultaneously Updates Probabilities for Multiple Contexts", Sep 18, 2007
- Itschak Weissman. "United States Patent US7269781 Discrete Universal Denoising with Reliability Information", Sep 11, 2007
- Itschak Weissman. "United States Patent US7123172 Method and System for Determining an Optimal or Near Optimal Set of Contexts by Constructing a Multi-directional Context Tree", Oct 17, 2006
- Itschak Weissman. "United States Patent US7047472 Method For Correcting Noise Errors in a Digital Signal", May 16, 2006

## LINKS

- My Research Group/Lab: <https://web.stanford.edu/~tsachy/>

## Teaching

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### COURSES

#### 2022-23

- Data Compression: Theory and Applications: EE 274 (Aut)

#### 2020-21

- Information Science and Engineering: ENGR 76 (Spr)
- Information Theory: EE 276 (Win)
- Information-theoretic Lower Bounds in Data Science: EE 378C (Spr)
- Introductory Research Seminar in Electrical Engineering: EE 301 (Aut)
- Project Lab: Video and Audio Technology for Live Theater in the Age of COVID: CS 349T, EE 192T (Aut)
- Science of Information: EE 25N (Aut)

#### 2019-20

- Information Theory: EE 276, STATS 376A (Win)
- Science of Information: EE 25N (Aut)

### STANFORD ADVISEES

#### Doctoral Dissertation Reader (AC)

Surin Ahn, Iliana Bray, Wei-Ning Chen, Tolga Ergen, Shubh Gupta, Sreela Kodali, Yi Liu, Ariana Mann, Cindy Nguyen, Mark Nishimura, Mira Partha, Jenya Pergament, Daria Reshetova, Saarthak Sarup, Ajay Tripathi, Kailas Vodrahalli, Eric Wu, Lisa Yamada, Pumiao Yan

#### Orals Chair

Joshua Brakensiek

#### Doctoral Dissertation Advisor (AC)

Noah Huffman, Berivan Isik, Jay Mardia

#### Master's Program Advisor

Shiyuan Liu

#### Doctoral (Program)

Sahasrajit Sarmasarkar