



## Seminar Announcement

**Dr. Mikel Hernaez**  
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**Electrical Engineering**  
**Stanford University**



Thursday, April 14, 2016  
Green Hall, Room 0120  
10:10 AM

### Genomic Information Representation: Present and Future Challenges

**Abstract:** In the last decade, the amount of genomic data generated has increased from the order of Gigabytes to Petabytes, and it is expected to grow beyond the Exabytes in the next four years. This sudden growth has been possible due to technological advances and a drastic reduction in the cost of genome sequencing. However, this growth is happening without the appropriate formats and/or standards that can keep up with this pace. As a consequence, the storage and dissemination of the genomic data is becoming a burden for biomedical advances. And although compression schemes tailored to the genomic data are being proposed to facilitate this effort, they are yet not widely adopted.

In this talk I will concentrate on current efforts by the International Standardization Organization (ISO) to establish a standard for genomic information representation, which goes beyond compression schemes, of which I am an active participant. I will walk the audience through the process of this initiative, describe my contributions, and expose the several challenges that need to be resolved. To conclude, I will talk about some of the lessons that we have learnt in the process and the research that is coming out from them.

**Bio:** Mikel Hernaez is currently a postdoctoral researcher in the Electrical Engineering department at Stanford University, working with Prof. Tsachy Weissman. Prior to Stanford, he was the Director of Research of a Spain-based start-up which provides fast-and-secure communication solutions. The company has received several awards for their innovation. He graduated Summa Cum Laude from his PhD at the University of Navarra, Spain, in 2012, after which he became a lecturer of the Coding Theory and Communication System courses. Prior to that, in 2009, he graduated with B.Sc. and M.Sc. degrees in Telecommunication Engineering (Electrical Engineering) from the same university. His research interests include compression and coding, bioinformatics, information theory, machine learning, communications, and signal processing. He is also the organizer of the Stanford Compression Forum (SCF), one of the leaders of the International Standardization Organization (ISO) initiative for genomic data compression, and a member of the Stanford Data Science Initiative (SDSI).