



**THE CHINESE UNIVERSITY OF HONG KONG**  
Department of Information Engineering

*Seminar*

**Crowdsourcing:  
Low complexity, Minimax Optimal Algorithms**

by

**Prof. Richard Combes**  
Assistant Professor  
Supelec

**Date : 22 Nov., 2016 (Tue.)**  
**Time : 11:00am – 12:00noon**  
**Venue : Room 121, Ho Sin Hang Engineering Building**  
**The Chinese University of Hong Kong**

Abstract

We consider the problem of accurately estimating the reliability of workers based on noisy labels they provide, which is a fundamental question in crowdsourcing. We propose a novel lower bound on the minimax estimation error which applies to any estimation procedure. We further propose Triangular Estimation (TE), an algorithm for estimating the reliability of workers. TE has low complexity, may be implemented in a streaming setting when labels are provided by workers in real time, and does not rely on an iterative procedure. We further prove that TE is minimax optimal and matches our lower bound. We conclude by assessing the performance of TE and other state-of-the-art algorithms on both synthetic and real-world data sets. Joint work with Thomas Bonald.

More info at: <https://arxiv.org/abs/1606.00226>.

Biography

Richard Combes is currently an assistant professor in Supelec. He received the Engineering Degree from Telecom Paristech (2008), the Master Degree in Mathematics from university of Paris VII (2009) and the Ph.D. degree in Mathematics from university of Paris VI (2013). He was a visiting scientist at INRIA (2012) and a post-doc in KTH (2013). He received the best paper award at CNSM 2011. His current research interests are machine learning, networks and probability. Dr. Xiongyan Tang is now the Chief Technologist and CTO of Network Technology Research, China Unicom, vice chairman of China Communication Standardization Association (CCSA) TC10, vice-chairman of Technical Committee of China SDN/NFV Industrial Alliance. He has more than 20 years of experience in telecommunication technologies. He received his Ph.D degree in telecom engineering from Beijing University of Posts and Telecommunications in 1994. From 1994 to 1997, he conducted research of high-speed optical communications in Singapore and Germany. Since 1998, he has been working on technology management and R&D of innovative telecom services in telecom operators in China. His professional fields include broadband communications, IP networks, optical transmission, and future Internet. In recent years, he's in charge of network transformation based on SDN/NFV at China Unicom.

**\*\* ALL ARE WELCOME \*\***