SPECIAL SESSION

Learning from pairwise relationships: non-metric proximities, indefinite kernels, and graphs

Pairwise relationship data arise in fields such as bioinformatics, social network analysis, cognitive psychology, internet commerce, computer vision, and natural language processing. For such data, the relationships between samples are naturally encoded by general proximities (also called similarities), indefinite kernels, or graphs. Recognizing that standard metric-space learning methods are ill-suited to learn from these structures, researchers have been developing new algorithms that natively learn from general pairwise relationships. Relevant research directions include: generative models for proximity-based learning, learning from indefinite kernels, and learning on graphs. This special session will a) bring together researchers from these three areas to share their recent work, stimulate cross-fertilization of ideas, and advance the state-of-the-art in machine learning; b) introduce the broader community of signal and information processing researchers to the field of learning from pairwise relationships.

We invite papers on the theory and application of learning – that is classification, clustering, ranking, and regression – from pairwise relationship data. Example theoretical topics are: generative models for pairwise relationships; learning from indefinite kernels; learning on graphs; fusing metric features and pairwise relationships; human learning, cognition, similarity, and categorization. Example application topics are: social networks analysis; internet commerce; genomics, proteomics, and bioinformatics; biometrics, forensics and computer vision; fraud and anomaly detection; financial engineering; music information retrieval and audio similarity.

Submission instructions: Submissions are **by invitation** and will be presented in **poster format**. Four-to-six-page papers are **due January 10, 2010**. The papers will be reviewed for constructive feedback, and will be published in the conference proceedings. Invited authors are encouraged to send an abstract to the co-chairs for preliminary feedback by October 31, 2009. Further submission instructions will be posted on the conference website `http://www.conference.iet.unipi.it/cip2010/`.

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