



Seminar

Byron Wallace

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Machine Learning in Evidence-Based Medicine: Taming the Clinical Data Deluge

An unprecedented volume of biomedical evidence is being published today. Indeed, PubMed now indexes upwards of 22 million articles. This volume of literature imposes a substantial burden on practitioners of Evidence-Based Medicine (EBM), which now informs all levels of healthcare. Systematic reviews are the cornerstone of EBM. To perform them, researchers must painstakingly identify the few tens of relevant articles among the hundreds of thousands of published clinical trials. Further exacerbating the situation, the cost of overlooking relevant articles is high: it is imperative that all relevant evidence is included in a synthesis. This evidence identification step has consumed an increasingly unsustainable amount of researcher time. If we are to realistically realize the promise of EBM, we must develop computational methods to optimize the systematic review process.

To this end, I will present novel data mining and machine learning methods that look to semi-automate the process of relevant literature discovery for EBM. These methods address properties inherent to the systematic review scenario, including: class imbalance and asymmetric costs; expensive and highly skilled domain experts with limited time resources; and multiple annotators of varying skill and price.

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12.00-13.00

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