Cool things from JSM 2017

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Inference without assumptions

- Larry Wasserman, "Inference without assumptions, Review and Current Progress"
- Conformal prediction by Vovk, Gammerman and Shafer (2006)
- Exact prediction intervals, *only* needing to assume i.i.d. data
  - Suppose $Y_1, \ldots, Y_n \sim F$ iid
  - Construct set S, such that

$$\Pr[Y^* \in S] \geq 1 - \alpha$$

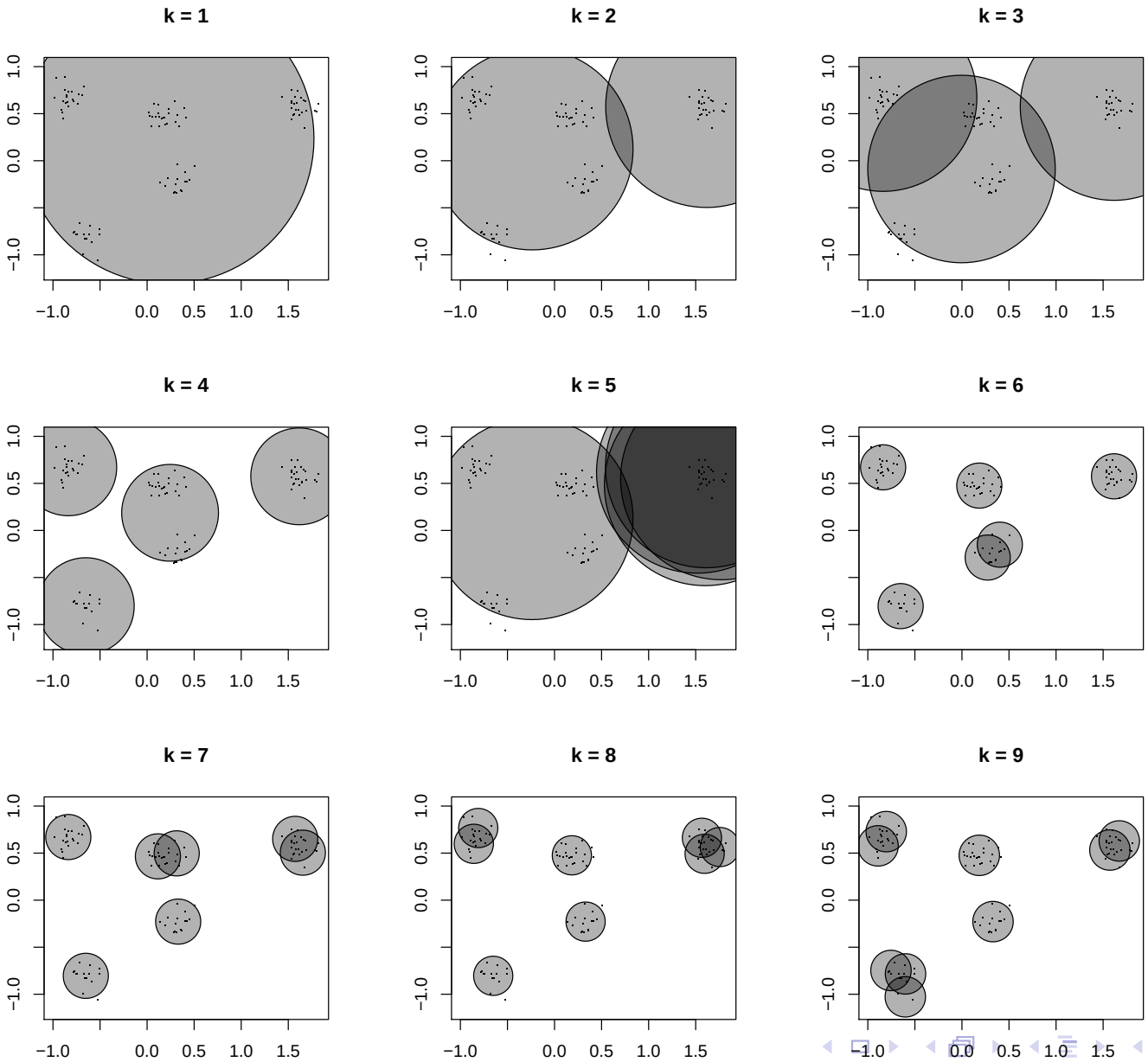
    for a new $Y^* \sim F$.
- Application to k-means..

Using conformal prediction to choose k

- Wasserman's idea: build prediction set using k-means and data-splitting.
- Resulting prediction set is a union of spheres centered around the centroids.
- When spheres intersect, merge those clusters.

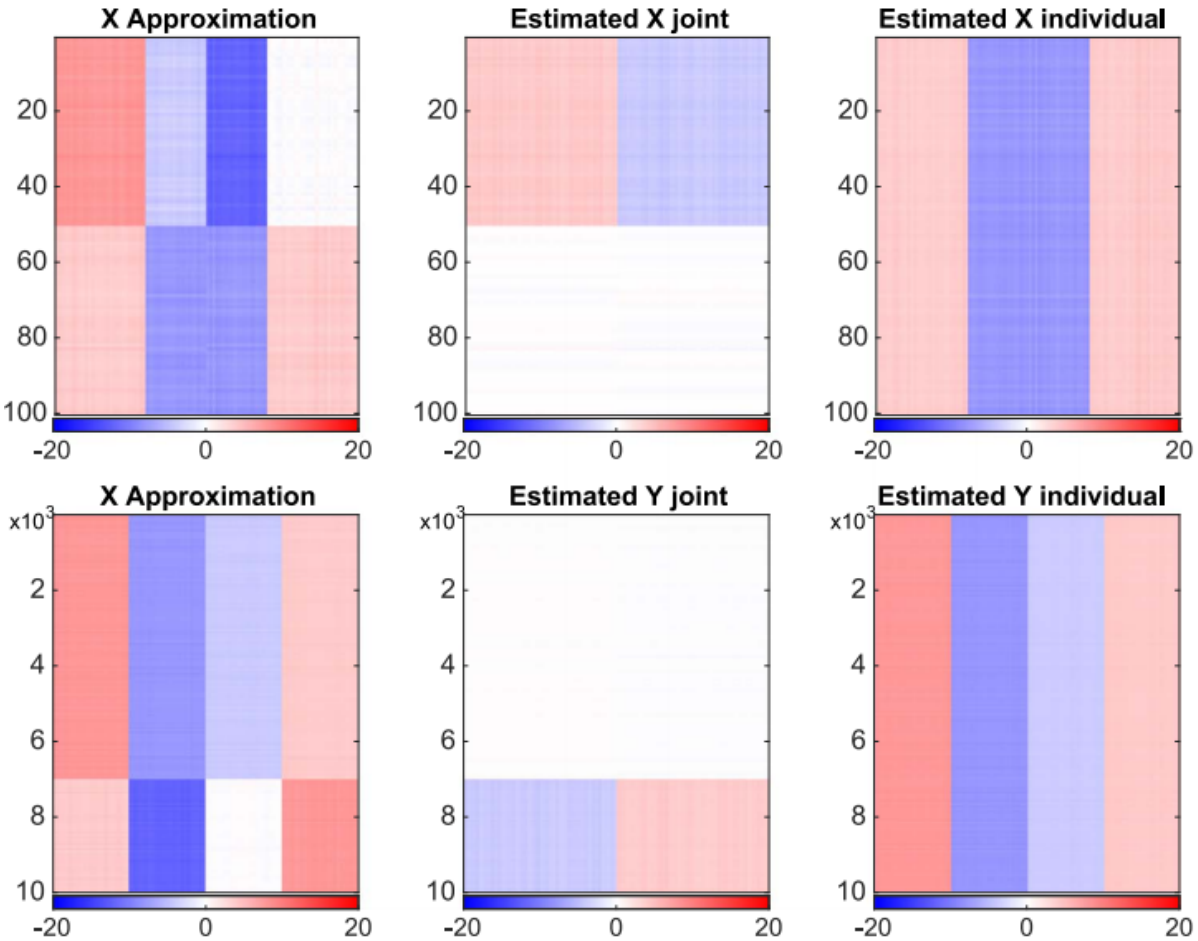
Does it work? I tried it out myself..

Simple simulation with $k = 5$ and $\alpha = 0.05$



JIVE-Joint and individual variation explained

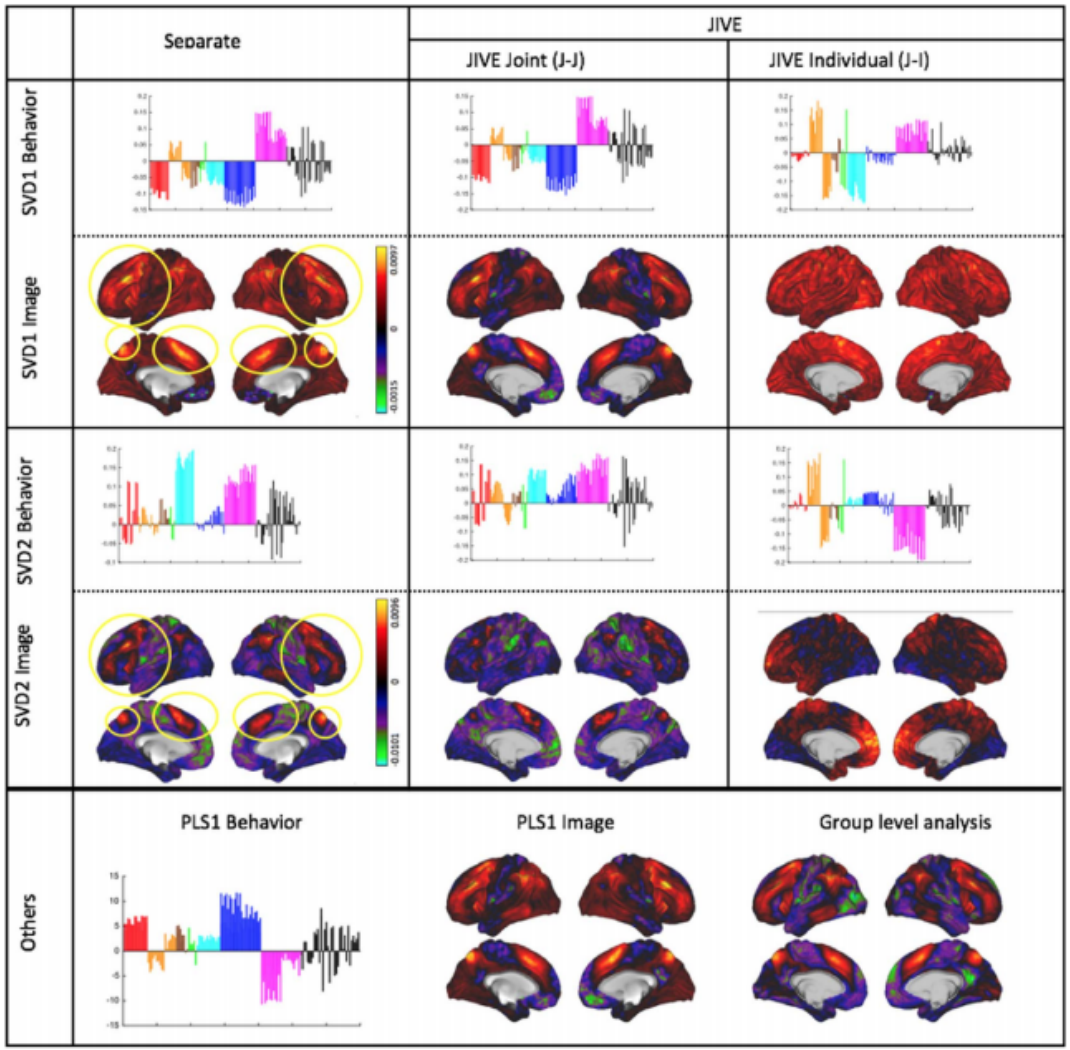
- Method for integrating two datasets, and decomposing into joint and individual variance components



- Angled-Based JIVE described in Feng, Hannig, Jiang and Marron (2017)

JIVE-Joint and individual variation explained

- Benjamin Risk described his joint work with Yu, Zhang and Marron applied to HCP data, comparing JIVE to PLS (partial least squares)



Fingerprinting

Functional connectome fingerprinting: identifying individuals using patterns of brain connectivity

Emily S Finn[1,7], Xilin Shen[2,7], Dustin Scheinost[2], Monica D Rosenberg[3], Jessica Huang[2], Marvin M Chun[1,3,4], Xenophon Papademetris[2,5] & R Todd Constable[1,2,6]

Factors Affecting Characterization and Localization of Interindividual Differences in Functional Connectivity Using MRI

Raag D. Airan,[1] Joshua T. Vogelstein,[2,3] Jay J. Pillai,[1] Brian Caffo,[4] James J. Pekar,[1,5] and Haris I. Sair[1]*

Brian Caffo is thinking about "fingerprinting" from a statistical point of view