Eliciting Human Judgment for Prediction Algorithms
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Abstract: Even when human point forecasts are less accurate than data-based algorithm predictions, they can still help boost performance by being used as algorithm inputs. Assuming one uses human judgment indirectly in this manner, we propose changing the elicitation question from the traditional direct forecast (DF) to what we call the private information adjustment (PIA): how much the human thinks the algorithm should adjust its forecast to account for information the human has that is unused by the algorithm. Using stylized models with and without random error, we theoretically prove that human random error makes eliciting the PIA lead to more accurate predictions than eliciting the DF. However, this DF-PIA gap does not exist for perfectly consistent forecasters. The DF-PIA gap is increasing in the random error that people make while incorporating public information (data that the algorithm uses) but is decreasing in the random error that people make while incorporating private information (data that only the human can use). In controlled experiments with students and Amazon Mechanical Turk workers, we find support for these hypotheses.

Joint work with Rouba Ibrahim (University College London) and Jordan Tong (University of Wisconsin-Madison).

Bio: Dr Song-Hee Kim is an Associate Professor of Operations Management at SNU Business School of Seoul National University in South Korea. Her research focuses on making data-driven and evidence-based decisions within service systems, with an emphasis on problems related to healthcare delivery. She has received several academic awards including the Best OM Paper in Management Science Award (winner), MSOM Best Paper Award (finalist), INFORMS Pierskalla Award (finalist), and MSOM Student Paper Award (first place). She serves as an associate/senior editor for the journals *Management Science*, *Manufacturing & Services Operations Management*, *Production and Operations Management*, and *Health Care Management Science*. She received her BS from Cornell University and PhD from Columbia University. Prior to joining SNU Business School, Dr Kim was a Postdoctoral Associate at the Yale School of Management and an Assistant Professor at University of Southern California's Marshall School of Business.

All interested are welcome!
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