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UNIVERSITY OF WISCONSIN–MADISON

Please Reply To:

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Dear Committee Member,

I am writing to apply for the research funding from American Family Insurance. I am an assistant professor in the Department of Statistics at the University of Wisconsin-Madison. My research is in the intersection of mathematics, statistics, and computer science, with a focus on **signal processing and data fusion**. Specific interests include higher-order tensor methods, high dimensional statistics, and applications to network analyses and neuroimaging.

The prevailing theme in my proposal is to develop powerful machine learning methods and application for advancing knowledges in data fusion. Specifically, I will focus on developing statistical methods for high-dimensional high-order object data (a.k.a. tensors) with applications to social networks, brain imaging, and integrative analysis of multimodal data. Analyzing tensor data with increasing dimensionality and ever-growing complexity requires the development of novel machine learning tools. In this regard, my work will link theory and practice, and also expand core computational areas based on the questions raised in the applied endeavors.

My interdisciplinary research efforts have been reflected in my training. Prior to UW-Madison, I was a postdoc in Computer Science at UC Berkeley, where I was also affiliated with Chan-Zuckerberg Biohub at San Francisco. In 2015-2017, I was a Simons postdoc in Biology and Mathematics at University of Pennsylvania. I obtained my Ph.D. in Statistics from the University of Chicago in 2015 and B.S. in Mathematics from Fudan University

in 2010. I plan to leverage my interdisciplinary background to find new solutions to data problems arising from science and engineering.

This proposal lays out an ambitious plan aiming to aid decision-making in health industry via the development of efficient data fusion methods for high-dimensional tensors. The software packages resulting from this proposal, will be released freely, as well as related visualization tools for tensor data analyses. With the support of American Family Insurance program, I will organize a series of workshops that promote the applications of tensor data analysis in industry. As one of the few female faculty members in my home department, I have been striving to encourage more under-represented students into the emerging data science. I plan to create an undergraduate course on **introduction to data sciences** that inspire more students in learning data analytic tools to address important questions in daily life.

Enclosed please find my CV and research proposal. Thank you in advance for your consideration.

Sincerely,
Miaoyan Wang