Center for Statistics and Applications in Forensic Evidence
Iowa State University
195 Durham Center, 613 Morill Rd., Ames, IA 50011

Jia Li
The Pennsylvania State University

April 23, 2020

Re: Submission to Statistical Analysis and Data Mining

Dear Dr. Li,

Please find attached a manuscript, "A Convolutional Neural Network for Outsole Recognition" intended for submission to Statistical Analysis and Data Mining.

The manuscript describes a computer vision algorithm which automates the recognition of geometric shapes in images of shoe outsoles. This algorithm uses a scheme similar to that used by footwear forensic analysts, unlike other convolutional neural network based analyses in footwear forensics. My coauthor, Dr. Susan VanderPlas, and I describe the model's structure, capabilities, and overall performance; we also explore situations where the model's automatic recognition process does not succeed and provide some possible solutions for these issues going forward. We believe this work lays the foundation for assessing footwear evidence quantitatively, which will improve the utility of forensic evidence and make the justice system's evaluation of evidence more fair.

We hope that you find the manuscript acceptable for publication in Statistical Analysis and Data Mining. If there is any additional information we can provide, please feel free to contact me directly.

Sincerely,

Miranda Tilton
Center for Statistics and Applications in Forensic Evidence
Iowa State University