From:

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To:

Wm Michael Barnes '64 Department of Industrial and Systems Engineering
Texas A&M University
Emerging Technologies Building, 3131 TAMU, 101 Bizzell Street, College
Station, TX 77843

Subject: Cover Letter for Applying for the Tenure-Track Assistant Professor Position in Industrial
& Systems Engineering

Dear the search committee,

I am writing to express my strong interest in the Tenure-Track Assistant Professor position in the
Wm Michael Barnes '64 Department of Industrial and Systems Engineering at Texas A&M University. I am currently a Postdoctoral Associate in the Department of Urban Studies and Planning
at the Massachusetts Institute of Technology (MIT), where I conduct interdisciplinary research in
Data Science, Machine Learning, Urban Data Analytics, and Information Systems. I also lead the
spatiotemporal data modeling project. With a robust research background in Data Science, a deep
commitment to the academic community, and a passion for teaching, I am enthusiastic about the
opportunity to join your department.

In my current role, I work closely with Prof. Jinhua Zhao on addressing a series of data-driven
machine learning problems, particularly in the Mens, Manus, and Machina (M3S) project and the
Department of Energy (DOE) projects. Specifically, the topics include causal inference from mobility networks and international trade using tensor algorithms, sparse data processing and learning algorithms, and interpretable machine learning in computational social science data. Prior to
joining MIT, I received my Ph.D. degree in Civil Engineering (Transportation) from the University
of Montreal in Canada where I was fortunately supported by the IVADO PhD Excellence Scholarship. The Ph.D. thesis was entitled "Matrix and Tensor Models for Spatiotemporal Traffic Data
Imputation and Forecasting".

My research focuses on modeling real-world spatiotemporal data using machine learning algorithms. I have published 10 first-author papers (plus 5 co-authored papers) in top-tier scientific
journals in the Data Science and Machine Learning, including *INFORMS Journal on Computing*,
IEEE Transactions on Pattern Analysis and Machine Intelligence, and *IEEE Transactions on Knowledge
and Data Engineering*. I have also presented my work at numerous conferences. My research in
data science, information systems, urban data analytics, and transportation closely aligns with
the department's strengths in big data and informatics, infrastructure and transportation, and
systems engineering. I am particularly excited about the potential to contribute to the research
projects and initiatives within the Institute of Data Science and the Department of Electrical and
Computer Engineering at Texas A&M University.

My teaching philosophy centers on fostering a deep understanding of core principles, encouraging critical thinking, and applying theoretical knowledge to practical problems. I take a student-centered approach, emphasizing active learning and engagement. I believe that students learn best when they are actively involved in their own learning process. To facilitate this, I employ a variety of teaching methods, including lectures, hands-on labs, group projects, and interactive discussions. My goal is to create an inclusive learning environment where all students feel valued and are encouraged to contribute their unique perspectives. I am particularly interested in developing new data science courses in Industrial and System Engineering at Texas A&M University and contributing to the curriculum development within your department.

Beyond research and teaching, I am deeply committed to service within the academic community. I have served as a student member of the IEEE and CIRRELT. I am an active reviewer for more than 10 scientific journals, handling manuscripts in the areas such as data engineering, optimization, signal processing, applied mathematics, logistics and transportation. Additionally, I am passionate about promoting open science in academia, I have led several open-source projects on GitHub, accumulating a total of 4.5k stars, including transdim and awesome-latex-drawing, which have gained popularity due to their well-documented datasets and algorithmic implementations. I am eager to contribute further to the open science movement in data science, data engineering, and data analytics.

My three references are

- Prof. Jinhua Zhao (`jinhua@mit.edu`) in the Department of Urban Studies and Planning at MIT, Cambridge, MA 02139, USA.
- Prof. Nicolas Saunier (`nicolas.saunier@polymtl.ca`) in the Civil, Geological and Mining Engineering Department at Polytechnique Montréal, Montréal, QC H3T 1J4, Canada.
- Prof. HanQin Cai (`hqcai@ucf.edu`) in the Department of Statistics and Data Science at the University of Central Florida, Orlando, FL 32816, USA.

Please check out my curriculum vitae and personal statement. Thank you for considering my application. I look forward to the opportunity to further discuss how I can contribute to your department.

Yours sincerely,

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