

PROMOTION RECOMMENDATION
The University of Michigan
College of Engineering
Department of Civil and Environmental Engineering

Branko Kerkez, assistant professor of civil and environmental engineering, Department of Civil and Environmental Engineering, College of Engineering, is recommended for promotion to associate professor of civil and environmental engineering, with tenure, Department of Civil and Environmental Engineering, College of Engineering.

Academic Degrees:

Ph.D.	2012	University of California Berkeley, Civil Engineering, Berkeley, CA
M.S.	2012	University of California Berkeley, Electrical Engineering, Berkeley, CA
M.S.	2008	University of California Berkeley, Civil Engineering, Berkeley, CA
B.S.	2007	University of Florida, Civil & Environmental Engineering, Gainesville, FL

Professional Record:

2015 - Present	Board Member, Technology Advisor, Great Lakes Biotech Academy, Indianapolis, IN
2013 - Present	Assistant Professor, Department of Civil & Environmental Engineering, University of Michigan
2012 - Present	Founder, CTO, Metronome Systems, Berkeley, CA

Summary of Evaluation:

Teaching: Professor Kerkez's performance as a teacher at the undergraduate level is excellent. His teaching evaluation scores are some of the highest ever received in the Department of Civil and Environmental Engineering (CEE). As the letters from undergraduate students attest, he has shown an unflinching commitment to provide a positive, enriching experience for our students through pedagogical innovation, as well as the cultivation of rapport. At the graduate level, he has developed a new course that has quickly become one of the most popular in our graduate curriculum. The mentorship he has provided to the researchers in his laboratory has also been very strong. He has graduated two Ph.D. students, and is currently advising four more, two of which are well on their way toward their degrees. He has also gone out of his way to include undergraduates in his research activity, having advised over 20 undergraduate students on research projects over the last six years. Letters from his research advisees (at both undergraduate and graduate levels) describe a patient mentor whose first priority is clearly the intellectual growth of his students.

Research: Professor Kerkez has developed a highly visible, widely respected, and well-funded research program. He has built his reputation as an international leader in the area of *Smart Water Systems*. He has mounted an extraordinarily extensive experimental program, with large-scale hardware deployments in several urban areas, including Ann Arbor and Detroit. His experimental deployments make use of sensors, actuators, and other hardware, as well as data

protocols and web services that have been entirely designed and built by his group. Simultaneously with these experimental campaigns, he and his students have conducted significant analytical and simulation-based studies related to the real-time monitoring and control of watersheds on extremely large scales, with innovations in algorithmic development and probabilistic inference. His group has established a unique reputation within his research community, for both its rigor and multidisciplinary.

He has been highly effective at gaining both funding and visibility for his work, as evidenced by his recent receipt of the Gilbreth Lectureship from the NAE. He has 19 peer-reviewed journal papers either published or in press, many of which are published in the top journals in his field. He is the principal author of a paper in *Environmental Science & Technology* (the undisputed top journal in his field) that won the designation of Feature Paper of the Year. His conference activity has also been extremely active, including a presence at the top meetings in his area. His fundraising has been unusually strong, with total funds for all grants on which he has participated exceeding \$43M. Of that, \$3.5M is for grants on which he is the PI, including the prestigious NSF CAREER Award. He has leveraged this funding to develop a strong research group, two of which have graduated with a Ph.D.

Recent and Significant Publications:

- Wong, B.P., Kerkez, B. “Real-time control of urban headwater catchments through linear feedback: performance, analysis and site selection,” *Water Resources Research*, 09/2018, Accepted, in press.
- Mullapudi, A., Wong, B.P., Bartos, M.D., Kerkez, B. “Shaping streamflow using a real-time stormwater control network,” *Sensors*, 2018; 2259.
- Bartos, M.D., Wong, B.P., Kerkez, B. “Open-storm: a complete framework for the measurement and control of urban water systems,” *Environmental Science: Water Research & Technology*, 2018.
- Fries, K.J., Kerkez, B. “Using sensor data to dynamically map large-scale models to site-scale forecasts: A case study using the National Water Model,” *Water Resources Research*, 05/2018.
- Fries, K.J., Kerkez, B. “Big ship data: Using vessel measurements to improve estimates of temperature and wind speed on the Great Lakes,” *Water Resources Research*, 04/2017.
- Wong, B.P., Kerkez B. “Real-time environmental sensor data: An application to water quality using web services,” *Environmental Modeling and Software*, 08/2016.
- Kerkez, B., Gruden, C., Lewis, M., Montestruque, L., Quigley, M., Wong, B.P., Bedig, A., Kertesz, R., Cadwalader, O., Poresky, A. “Smarter Stormwater Systems,” *Environmental Science & Technology*, 05/2016.

Service: Professor Kerkez’s departmental and university service is exemplary, most notably for his time as the chair of the CEE Undergraduate Recruitment Committee, which was highly successful. His service to his professional community includes chairing important technical committees in the two dominant societies (CUAHSI and EWRI) to which he contributes. The substantive nature of his service contributions to CUAHSI has been recognized by the society through a prestigious award.

External Reviewers:

Reviewer A: “During my past 15 years’ experiences in academics, I find that Branko is the no. 1 colleague, who has made such outstanding achievements at his stage. I can hardly find anyone else in any university to compare to him.”

Reviewer B: “What particularly impressed me of Dr. Kerkez’s works is his ability in bringing advanced sensing technologies and data analytics to develop practical monitoring systems that help enhance our understanding of water systems.”

Reviewer C: “What makes his work so remarkable is that more than any other faculty member, he has brought the world of automated sensors into the water resources field, especially for urban hydrology to help with flood control and enhancing water quality.”

Reviewer D: “He doesn’t just develop sensors and sensor systems and then field test them. He goes one step further and sets out to establish the protocols and frameworks for how code itself is accessed and managed.”

Reviewer E: “I would rate him in the top 5% of his global [cohort]. He has a clear record of extramural funding, publication, real world impacts, and student mentoring that would be reviewed positively at [my institution].”

Reviewer F: “What transpires through all of his activities is the kind of interdisciplinary work that is particularly interesting, as it is tensioned by the standards of a number of different fields – systems thinking, artificial intelligence, engineering analysis, computer science and electronic, to name the few.”

Summary of Recommendation: Professor Kerkez has fashioned an unusually-successful, socially conscious, and highly-respected research program, while simultaneously cultivating an exceptional reputation as one of our university’s best teachers. He has established himself as a prominent thought-leader in his research area, and has had strong and tangible influence on his field both through his research and his service efforts. It is with the support of the College of Engineering Executive Committee that I recommend Branko Kerkez for promotion to associate professor of civil and environmental engineering, with tenure, Department of Civil and Environmental Engineering, College of Engineering.



Alec D. Gallimore, Ph.D.
Robert J. Vlasic Dean of Engineering
College of Engineering

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