Approved by the Regents
May 21, 2020

PROMOTION RECOMMENDATION
THE UNIVERSITY OF MICHIGAN
SCHOOL OF INFORMATION

Predrag Klasnja, assistant professor of information, School of Information, is recommended for promotion to associate professor of information, with tenure, School of Information.

Academic Degrees:

Ph.D.	2010	University of Washington, Seattle
B.S.	1995	University of Tennessee, Knoxville (Honors)

Professional Record:

2012 – present	Assistant Professor of Information, School of Information, University of Michigan
2016 – 2018	Assistant Scientific Investigator, Kaiser Permanente Washington Health Research Institute, Seattle, WA
2011 - 2012	National Library of Medicine Post-doctoral Fellow, Biomedical and Health Informatics, University of Washington, Seattle, WA
2011	Research Scientist, Information School, University of Washington, Seattle, WA
2006 – 2011	Graduate Research Assistant, Information School, University of Washington, Seattle, WA

Summary of Evaluation:
Teaching: Professor Klasnja has developed novel curricula, with interactive teaching approaches, and is an engaging, and encouraging mentor. Since he joined the School of Information (UMSI), Professor Klasnja has taught in the Master of Health Informatics (MHI) and Master of Science in Information (MSI) degree programs at UMSI. His teaching in the MHI and MSI programs has included significant curricular revisions and the development of a new course. He redeveloped a core MSI course in human-computer interaction, SI 582: Interaction Design, in his first year. He also developed a new course, SI 684: Designing Consumer Health Technologies — with a major revision implemented in its fourth iteration. In addition, he has developed a two-course sequence for the Massive Open Online Course Micromasters initiative (UX Research and Design with EdX). Professor Klasnja has also taught two courses that he did not design (SI 554 and SI 507).

Professor Klasnja mentors doctoral students, post-doctoral fellows, and junior faculty in both the human-computer interaction and behavioral medicine fields, two fields with differing expectations for mentorship. Currently, he is a dissertation co-chair for a student at the University of Washington Information School, and a first-year doctoral student at UMSI (co-advised with Professor Mark Newman). He has also served on dissertation committees for eight UMSI students who have graduated.

Professor Klasnja has mentored over 20 UMSI master's students in research, including one student project that won second place in a national competition at the National Institute on Drug

Abuse. He also serves as a mentor for three junior investigators who have received National Institutes of Health (NIH)-funded K awards. Two are faculty at the UM Medical School. He currently mentors a post-doctoral research fellow at Harvard University with another scholar who is working on their collaborative NIH-funded research. Finally, he taught and mentored junior and mid-career investigators in 2014, 2016, 2017, 2018 and 2019 as part of the NIH mHealth Training Institute at University of California-Los Angeles. The institute receives over 300 applicants every year of which 30 are selected to receive interdisciplinary training. Professor Klasnja has both helped to select applicants and mentor six of the scholars accepted into the program. Additionally, he often co-authors scholarly papers with his trainees. Specifically, Professor Klasnja has been a senior or second author on three papers with his primary doctoral or postdoctoral advisees, and co-author for an additional 19 published papers in which a trainee was the first author. His teaching statement indicates that he focuses his mentoring on skills that are not often taught, but that are important to success as a researcher, such as designing studies to play on one's strengths, and learning to tell a story with data.

Research: Professor Klasnja is an interdisciplinary scholar whose work contributes to the fields of human-computer interaction, behavioral medicine, and health informatics. Professor Klasnja's most significant scholarly impact has been in the design and evaluation of just-in-time adaptive interventions (JITAIs)—mobile-health applications that aim to provide support when and where it is most needed, and when individuals are most receptive to receiving it. As part of this, he has been at the forefront of developing an influential method for evaluation of JITAIs called micro-randomized trials (MRTs), which are an experimental design for studying dynamics of causal effects of JITAIs.

Two papers exemplify these contributions. His 2015 paper, "Microrandomized trials: An experimental design for developing just-in-time adaptive interventions," published in the journal *Health Psychology*, has been particularly influential. According to the article, MRTs "[provide] empirical data for optimizing JITAIs by enabling researchers to study proximal effects of specific intervention components, changes in these effects over time, and the psychosocial or contextual factors that moderate those time-varying effects." The MRT method builds upon factorial experiment designs by introducing the ability for researchers to select contexts for the delivery of interventions and to investigate the relative influence of time- and context-varying factors on the effectiveness of intervention components.

His paper, "Efficacy of contextually-tailored suggestions for physical activity: A micro-randomized optimization trial of HeartSteps" reports the results of the first-ever large-scale MRT study, which evaluated several intervention components within the HeartSteps application. HeartSteps is a mobile app-based JITAI that seeks to increase its users' physical activity through contextually-targeted messaging. The HeartSteps MRT was designed to examine the efficacy of two intervention strategies: activity-promoting (walking suggestion) and anti-sedentary messaging. Within each of these strategies, messages were tailored to the users' current context across four dimensions: time of day, day of the week (weekend/weekday), location (home/work/other), and weather. As a first publication of the results of the HeartSteps trial, this paper focuses on the high-level impact of contextually-tailored messaging and compares the efficacy of activity-promoting and anti-sedentary messaging. The MRT methodology allowed Professor Klasnja and his team to efficiently test both types of messaging within the same trial

and to assess the impact of each independently, with findings that show that activity-promoting messages outperform anti-sedentary messages (the latter had no significant effect), but that the effectiveness of messages diminish over time, probably due to habituation.

Professor Klasnja's research contributions have been facilitated by multi-year interdisciplinary collaborations that are unusual in their depth, and that result in impact across multiple fields. He has been the principal investigator (PI) on three extramurally-funded NIH R01/U01 grants, including one as the sole PI. He is also well-known for bridging knowledge between human-computer interaction and health informatics.

Professor Klasnja has received two publication awards that acknowledge the enduring impact of his early scholarship on his fields. His co-authored paper, "Flowers or a robot army? Encouraging awareness & activity with personal, mobile displays" received a "10-Year Impact Award" in 2018 from the prestigious computer science conference, Association of Computing Machinery (ACM) International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp). Furthermore, one of his first-authored papers, "Healthcare in the pocket: Mapping the space of mobile-phone health interventions," was honored by the *Journal of Biomedical Informatics* as one of 30 papers to be included in their 50th Anniversary Retrospective Special Issue. As of January 2, 2020, Professor Klasnja's papers have been cited 6,286 times in Google Scholar, with an h-index of 28 and an i10-index of 41.

Recent and Significant Publications:

Klasnja, P., Smith, S., Seewald, N.J., Lee, A., Hall, K., Luers, B., Hekler, E.B., & Murphy, S.A. (2018). Efficacy of contextually-tailored suggestions for physical activity: A micro-randomized optimization trial of HeartSteps. *Annals of Behavioral Medicine* 53(6), 573-582.

Hekler, E.B., Klasnja, P., Riley, W.T., Buman, M.P., & Huberty, J. (2016). Agile science: Creating useful products for behavior change in the real-world. *Translational Behavioral Medicine*, 6(2), 317-28.

Klasnja, P., Hekler, E.B., Shiffman, S., Boruvka, A., Almirall, D., Tewari, A., & Murphy, S.A. (2015). Microrandomized trials: An experimental design for developing just-in-time adaptive interventions. *Health Psychology*, 34(Suppl), 1220-1228.

Hekler, E.B., Klasnja, P., Froehlich, J.E., & Buman, M.P. (2013). Mind the theoretical gap: Interpreting, Using, and developing behavioral theory in HCI research. Proceedings of the *ACM CHI Conference on Human Factors in Computing Systems* (CHI 2013). (Best Paper Award)

Klasnja, P., & Pratt, W. (2012). Healthcare in the pocket: Mapping the space of mobile-phone health interventions. *Journal of Biomedical Informatics*, 45(1), 184-198.

Service: Professor Klasnja's record demonstrates continuous commitments to internal service and service to multiple external communities. His longest-term service commitment at UMSI has been on the MHI Committee — a group responsible for administering the MHI program which is governed by UMSI, the School of Public Health, and the Department of Learning Health Sciences at the Medical School. The committee has undertaken a number of activities both to maintain and grow the program and Professor Klasnja has participated in these efforts. In addition, he has served on two faculty search committees, in 2012 and 2014. Professor

Klasnja has also worked in ad hoc reviewing roles in other years to help with the large stream of job applicants at UMSI who have a research focus on health.

Externally, Professor Klasnja has high visibility in his service to the health technology research community. He has served as an associate chair for several conferences, the Association for Computing Machinery's (ACM) Conference on Human Factors in Computing Systems (CHI) for four years, Pervasive Health for two years and the American Medical Informatics Association for one year. In addition, he has reviewed papers in the health technology area, including for the ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp) conference, the ACM Conference on Computer Supported Cooperative Work (CSCW), and the ACM Conference on Designing Interactive Systems (DIS). He has also reviewed for multiple journals including the *Journal of Biomedical Informatics*, *Circulation*, the *Journal of the American Medical Informatics Association*, the *Journal of American Society of Information Science and Technology*, the *Journal of Medical Internet Research*, *Health Education Research*, and *Current Directions in Psychological Science*. As a panelist, Professor Klasnja has reviewed grants for the NIH, the National Science Foundation, and the Agency for Healthcare Research and Quality.

External Reviewers:

Reviewer A: "I have no doubt that [Professor Klasnja's] work would meet the requirements for promotion to the rank of Associate Professor in my current department … and at my previous institution…"

Reviewer B: "Beyond [Professor Klasnja's] intellectual and critical thinking skills and his creativity, his ability to communicate and connect his ideas clearly with researcher[s] working in other disciplines has resulted in successful collaborations with leaders in the field of statistics, psychology, information and computer science working on designing, building and deploying novel digital health technologies. … I support [Professor Klasnja's] promotion in the strongest possible terms…"

Reviewer C: "[Professor Klasnja's] work is methodologically cutting-edge, conceptually sound, and applicable in many real-world settings. … I have no doubt that [Professor] Klasnja would easily meet the requirements for promotion to Associate Professor with tenure at [my institution]."

Reviewer D: "… my overall impression of Prof[essor] Klasnja's research, his promise for continued growth and productivity and his reputation as a scholar are extremely positive. … His work is highly visible both by technical researchers and by behavioral scientists. Impressively, I think Prof[essor] Klasnja is equally well regarded by both groups. He has established collaborations with some of the most in influential researchers in technology-supported health behavior change. …I would, *without any reservation*, recommend Prof[essor] Klasnja for tenure at [my institution], and I would recommend that you do the same at the University of Michigan."

Reviewer E: "… I am not surprised to see that [Professor] Klasnja has had considerable success securing external funds to support his research. … The fact that the majority of these projects

involve multiple [principle investigators] is a testimony to the interdisciplinary nature of [Professor] Klasnja's research program (and his ability to cultivate successful collaborations across disparate disciplines) .....I strongly recommend that you approve [Professor] Klasnja promotion to the rank of Associate Professor with tenure."

Reviewer F: " ... Professor Klasnja is a brilliant researcher - he collaborates with top scholars, synthesizes research, identifies gaps, and communicates his findings to push each respective field forward."

Reviewer G: "[Professor Klasnja] is a team leader.... [he] is an extremely innovative thinker. ... I cannot recommend him more highly for promotion."

Summary of Recommendation:
Professor Klasnja's accomplishments in the areas of teaching, research, and service meet promotion requirements. Therefore, with the support of the Promotion and Tenure Committee of the School of Infonnation, I enthusiastically recommend Predrag Klasnja for promotion to associate professor of information, with tenure, School of Information.

Thomas A. Finholt
Dean, School of Information

May 2020