SUZANA DRAGICEVIC
Eric Crighton Mentorship Award

Suzana directs the Spatial Analysis and Modeling (SAM) Laboratory which is a socially welcoming and advanced GIS technology lab space for her graduate students to pursue research and innovation. In addition, her graduate training at SFU follows a formal mentorship model which is a one-on-one direct relationship with the graduate student from the time of application for graduate studies and proceeding to graduation and beyond so that the student is supported at all stages of their academic and career journeys. Below, I have organized Suzana's contributions into general categories supported with explanations to demonstrate her mentorship contributions, impacts, and outcomes.

Establishing multiple channels to provide support to students, junior faculty, and employees.

Suzana's mentorship philosophy is anchored in the core principle that addressing a graduate student's personal needs first is key to their academic development and success. Suzana actualizes this with strategies such as: supporting individualized learning with regular one-on-one meetings; collaborative learning through peer-work in her SAM Lab Research Group; research communication and exchange with professionals via journal papers and conference presentations; engraining mutual support and learning in the SAM Lab Research Group culture; encouraging graduate student participation in SFU and Department of Geography activities; and sharing information about career planning and training opportunities to provision the long-term professional development of her graduate students. Suzana's mentorship continues to be instrumental in her graduate students' life-long journeys even after they leave SFU.

Because of Suzana's outstanding mentorship, students experience and gain diverse knowledge, skills and competencies in GIScience to tackle complex human-environmental interaction problems. Suzana considers the unique needs, aptitudes, interests, and professional goals of each of her graduate students as she guides their individual academic training. She meets each student where they are, maintaining a "big picture" view of each student's thesis or dissertation as they immerse themselves in the details of their research projects. Suzana brings her depth of knowledge and scholarly prowess to support the wide-ranging research pursuits of her graduate students. She firmly believes in disciplinary diversity. For example, the current SAM Lab Research Group pursues a wide range of methodologies including machine learning, deep learning, geographic automata modeling, and multi-criteria evaluation techniques applied to a vast array of geospatial phenomena. The result of her guidance in the SAM Lab Research Group is shown in the continuous stream of novel, innovative, and diverse research work published.

Because of her outstanding mentorship, students are completing their graduate degrees at both the MSc and PhD levels in less time than the departmental average. She meets students to individually develop action plans that support their specific learning and career goals. As a result, students evolve their work with a growth mindset that leads to effectiveness, confidence, and academic productivity. Another way Suzana supports students to complete their studies on

time is by securing funding through her many successful grant applications to the *Natural Sciences and Engineering Research Council (NSERC)* of Canada. Her hard work to secure adequate funds and physical resources significantly reduce financial and other stressors of her graduate students so they can achieve their individual potential and career goals.

Because of her outstanding mentorship, students are strongly supported and inducted into the culture of Geography, GIScience and Spatial Modeling disciplines. Suzana draws on her past experiences to continually adapt and inform her current mentorship practices. Currently she is the senior supervisor of two PhD and two MSc students. Prior to that she completed seven PhD, 16 MSc, and two Postdoctoral fellows. Additionally, she has co-supervised or served on the supervisory committee of another 22 graduate students. Moreover, she supervised eight undergraduate students as a part of the NSERC or VPR USRA programs. Suzana also encourages her students to attend, submit abstracts to, or present full papers at local, national, and international conferences. In 2023, her then doctoral student who has graduated in Summer 2024, Bright Addae, presented at the notable *International Conference on Geographic Information Science* hosted in Leeds, United Kingdom. In 2023, she was involved with planning a special session at the American Association of Geographers (AAG) annual meeting titled *Symposium on Human Dynamics Research: Geosimulations for Addressing Societal Challenges* held in April 2024. She urged her doctorate students to submit abstracts and to attend the conference event so as to connect with peers and experts in the discipline. She has also involved her students in organizing special sessions at conference events. For example, one of her PhD students helped to coordinate a special session on *Geospatial Artificial Intelligence (GeoAI): Current Status and Emerging Challenges* at the Canadian Association of Geographers (CAG) 73rd Annual Meeting at the University of Quebec in Montreal held May 8-12 in 2023. The graduate student obtained experience with writing the "call for abstracts" statement and corresponding with submitting authors from across Canada. Suzana also ensures that all her students transition smoothly and successfully to careers and professions beyond graduate studies. Her SAM Lab alumni have taken up academic and industry roles including professorships, leadership positions, and business ownerships in Canada, the USA, and other regions of the world. The continuous celebration of successes, accomplishments, and innovative contributions of her past and present graduate students attest to Suzana's remarkable capability as a graduate supervisor and mentor to her students and colleagues.

Because of her outstanding mentorship, graduate students are extensively supported in their professional growth. Suzana provides opportunities for her graduate students to gain technical research skills, direct research projects, take part in collaborations, and become leaders in different initiatives in her research group. By providing graduate students with extensive opportunities to participate at so many different levels of the research process, her students are well-equipped for leadership roles in academia, industry, and beyond. Suzana is also generous in sharing her research ideas and bestowing first-author status to her graduate students. As a result, her students graduate with experiences writing first-author papers that benefit them in academic and industry research roles. Many of Suzana's graduate students are also international and have unique hurdles in their studies including learning English as a second language. Through a systematic and incremental process, Suzana has supported her students in transforming their language ability within a few terms to become proficient communicators in the discipline. Additionally, Suzana strikes a balance between collaboration and fostering of independent research skills of each of her graduate students. In the process, her students obtain invaluable experiences in planning, drafting, and revising

research papers. In addition, she supports her students in crafting tactful and professional correspondence such as emails to journal editors, manuscript revision letters, and responses to reviewers. She also deftly supports graduate students in writing their first grant and scholarship applications, which has resulted in numerous successes in competitive institutional and national award competitions including: NSERC PGS-D, NSERC CGS-D, NSERC CGS-M, and the International Esri Young Scholar Award.

Creating a vital and engaged geography community locally, nationally and internationally.

Suzana's philosophy on leadership and wider geography graduate student training is rooted in advancing GIScience training through teaching, learning advising and authentic practical experiences. Suzana was a previous Geography Graduate Studies Committee (GSC) Chair and lead the graduate program though the early COVID-19 emergency. This may be regarded as the most challenging crisis the institution and department has faced in recent times. Many issues she identified and prioritized during that time, such as the need for more graduate student funding, were adopted as continued priorities by successive Graduate Studies Chairpersons. Suzana also organized a job awareness workshop called *"Mapping your future: Geography career opportunities beyond academia"* for Geography and FENV graduate students. Suzana remains an active member of the Geography GSC and continues to be involved in shaping the program. In addition, Suzana is a co-director of the SFU Esri Canada Center of Excellence (ECCE) in GIS, which facilitates opportunities for SFU students to connect with their peers and professionals across Canada. Further, Suzana served multiple times on the review panel for the *AAG Garrison Award for Best Dissertation in Computational Geography*, multiple times on the *NSERC Geosciences Selection Committee*, and is presently a member of the local organizing committee for the *International Cartographic Association Conference in 2025*.

Because of her outstanding mentorship, students beyond Suzana's SAM Lab Research Group have received training to advance their personal and professional growth. For instance, in her role as the GSC Program Chair from 2019 to 2021, Suzana taught both sections of the *"Introduction to Graduate Studies*" course in our department (Geog 600 and 601). In this course, she implemented assignments that encouraged new graduate students to become familiar with journals in their field, to practice presenting research, planning thesis section completion, and to learn about research and publishing resources available through the SFU Library. Suzana also offers a graduate studies course on *"Advanced Spatial Analysis and Modeling"* (Geog 651) in conjunction with her undergraduate *"Spatial Modeling"* course (Geog 451). The course attracts graduate students from other disciplines and departments as well. Suzana goes above and beyond what is expected, tailoring the course experience to each graduate student so they gain research and technical skills relevant to their thesis work. Suzana also contributes to graduate student training in her role as a co-director of the ECCE program at SFU. Through this program, students are provided with industry-standard GIS software access and training opportunities that would otherwise be financially unattainable. The program also provides networking avenues, scholarship opportunities, and conference experiences that contribute to advancing students technical and professional skillsets. Prior to COVID-19, she encouraged graduate and undergraduate students to present their research work in-person at the annual Esri User Conference event previously held in Vancouver and would arrange for attendance at no cost to students.

Because of her outstanding mentorship, students receive pedagogical training beyond typical graduate student training. Suzana encourages her graduate students to apply for teaching assistantship and sessional roles in our department. Such opportunities are vital in building and maintaining foundational knowledge of our field. It also helps us hone and update our technical skills to meet the ever-changing landscape of software tooling needed to conduct our research. Suzana sets an excellent example to her graduate students in how to adapt to the different needs and circumstances that arise with each new group of undergraduate students. In 2014, 2016, and 2018, she was also awarded grants through SFU's *Teaching and Learning Development Research Grants Program* to pursue investigations of how undergraduate students can be better supported in their inaugural scientific research experiences. By involving her graduate student teaching assistants as research assistants in these endeavours, she created unique opportunities for them to analyze, refine, and develop pedagogical approaches beyond what is possible in teaching assistantship roles. Additionally, Suzana creates unique teaching opportunities for her students based ontheir skills and interests. As an example, she invites past and present graduate students to give related talks in her courses from industry or research perspectives. Suzana provided me an exceptional opportunity to deploy a software tool I had developed for my doctoral research in the instruction of her Spatial Model ingcourse in Fall 2023 and 2024. Suzana advocated for special technical installation from our department's IT personnel to configure my software tool in the GIScience computer labs. As the course's teaching assistant, it was one of the most rewarding experiences of my life to see my research tool used to support students in gaining hands-on learning experiences with spatial modeling approaches. The published work and free software tools resulting from Suzana's trust in me will hopefully benefit other educators, students, and professionals in the GIScience community and beyond. Such an incredible opportunity was only possible because of Suzana's ardent support, guidance, and encouragement.

Suzana's mentorship philosophy is founded on the principles of truth, honesty, and fairness in fostering graduate students' personal and academic development. These principles establish a precedent for students and simultaneously promote a deep culture of mutual respect and open discussion. Additionally, Suzana's graduate students know that their voices will be heard and taken seriously. Any disagreements are resolved with evidence-informed rationality. This ensures students develop decision-making skills that benefit their own long-term planning and management. Suzana is also an ardent proponent of a healthy work-life balance, implementing fair and inclusive practices that recognize the diverse lives and learning needs of her graduate students. Her commitment extends to enhancing faculty-student relationships, mediating conflicts with empathy, and encouraging engagement through shared commonalities. Her conduct is formative and inspiring of honourable life-long values and behaviour in her graduate students and colleagues.

Because of her outstanding mentorship, students feel supported in their first forays in academic processes and peer-review procedures. As demonstrated throughout the previous sections, Suzana is professional in her conduct and role as graduate student mentor and colleague. Suzana is courteous and respectful in all correspondence and interactions with her mentees. The same qualities are demonstrated in how she conducts undergraduate and graduate student courses, converses with conference organizers, corresponds with journal editors, and the humility in which she responds to even the most vicious reviewer comments. Similarly, she does not compromise on academic standards or rigour when paper reviewers demand changes that detriment the accuracy or veracity of a scientific work. Suzana also does not subject her students to the harsh realities of the academic publication peer-review process before manuscripts are of sufficient calibre or completion. This can generate a lot of work for her, with potentially dozens of revisions being passed back and forth between Suzana and her graduate students.

Nevertheless, her commitment to produce high-quality research boosts student confidence and promotes the same work ethic for all her graduate students.

Commitment to inclusion and the specific mentoring needs of traditionally underrepresented groups.

Suzana's mentorship philosophy focuses on a systematic, comprehensive, and empathetic approach for every graduate student under her guidance. She is always available (even on weekends and late evenings) to listen and offer guidance to diverse student needs. As a result, she fosters an environment of trust and support. Suzana has also established and maintains a strong network of researchers and research group alumni that current students can turn to for further guidance and support. Implementing feedback and improvement pathways are important elements of her mentorship practice. Furthermore, Suzana's trademark commitment to her graduate student's mental, physical, and social well-being is at the forefront of her mentorship role. Her commitment to cultivating SAM Lab Research Group camaraderie is also evident in how she routinely invites the group for dinners at her home or at various dining venues in the city. This also helps her international students feel welcome and better acquainted with a new city.

Because of her outstanding mentorship, graduate students of diverse backgrounds and experiences know they are unequivocally supported. One of the hallmarks of Suzana's approach to graduate student mentorship has been her longstanding commitment to equity, diversity, and inclusion. Her graduate students include local and international students from many parts of the world. She has supervised the most culturally diverse range of graduate students in the Department of Geography at SFU and has developed unique strategies to support the well-being and effectiveness of such diverse research teams. In particular, she has been successful in attracting women and people of color to pursue graduate studies under her guidance. In the Fall 2024 term, she accepted to supervise two new graduate students from developing countries to pursue graduate research in her SAM Lab. Compared to local students, this effort required navigating complex new visa requirements for non-Canadians, committing more long-term funding upfront for these students, and assisting in resolving housing and other needs. Despite the greater workload, Suzana surmounted all challenges in the way to provide the opportunity for these two students from traditionally disadvantaged groups to pursue graduate studies. Suzana is also passionate about attracting women in the STEM disciplines. Her commitment and work in this area were previously communicated in outlets such as: (1) ***"Women in Remote Sensing, Photogrammetry and Spatial Information Science"***, *June 23, 2022, Interview for Spectrum, The ISPRS Student Consortium Newsletter, 15(3):13-15*, and (2) ***"Bookshelf Chat: Women in GIS share their favorite works"***; *March 3, 2020; YouTube, GISConnect, Videos that showcase members of the GIS community and GIS research, Sponsored by the Carolyn Merry Mini-Grant program administered by TRELIS-GS (Training and retaining women in STEM-Geospatial Sciences), USA*. As a responsible mentor, Suzana ensures her students are financially comfortable through her own research grant funding. She also encourages her students to apply for scholarships, grants, and teaching assistantships. By balancing financial well-being, managing workload, and laying out a path to success, her students constantly excel in their efforts at both the local and international levels.

Because of her outstanding mentorship, graduate students know they can always trust and depend on her. Suzana's devotion and commitment to her graduate students exceeds

all norms and expectations. For instance, she patiently guides each student from one milestone to the next and assists in bridging the knowledge gap when students lack the necessary experience to progress. Some students lack confidence or wrestle with the notion of imposter syndrome in the early stages of studies. Suzana's approach is to remind students to reflect on their achievements and progress which helps to internalize successes, overcome self-doubts, and become more confident researchers. Suzana is also responsive and accessible whenever her students need help. She will meet students at their convenience – even late into the evening – to help prepare manuscripts for submission, submit paper revisions to journals, refine conference presentations, or submit scholarship applications. For external students arriving at SFU, she works hard to make them feel welcome and comfortable as they settle into a new city, often far from friends and family. With her well-structured mentorship approach and practice highlighted throughout this letter, Suzana's outstanding commitment and dedication to supervision, advising, and mentorship have produced excellent outcomes for her students, her research program, for the Department of Geography, and for the Faculty of Environment at SFU. She works tirelessly to continuously improve her mentorship strategies, ensuring her current and future students benefit from her past mentorship experiences and that their individual needs are met. Suzana's CV reflects her sustained and long-term record of excellence in mentorship. Focusing on the last three academic years, Suzana's achievements in mentorship include:

(A) Graduate Students Mentorship: Suzana has supervised **five (5)** graduate students in the last three academic years, including 3 PhD students (one in-progress, two completed) and 2 MSc students (two completed). Despite the impacts of the COVID-19 pandemic, she graduated two MSc students amidst the institution's transition to fully remote learning activities. Regardless of the pandemic's effects on graduate program completion times, Suzana steadily supported one of the MSc students through two terms on leave and was instrumental in aiding two others in obtaining highly competitive jobs in the GIS industry at Esri Canada. In 2023, Suzana worked on attracting and developing competitive offers that were extended to three new graduate students to begin studies under her direction, supervision, and mentorship and these students have now arrived in her SAM Lab. In the past three years, she also expanded equity, diversity and inclusion (EDI) support for her graduate students by further prioritizing their mental, physical, and financial needs as well as overall health and well-being. She had regular meetings to discuss research matters and career goals as well as issues in family life. She obtained a significant 2023-2028 NSERC DG grant that assures funding for her current and new graduate students to work within her SAM Lab Research Group.

(B) Degree Completion Time: The average time of completion of graduate degrees for students under her direct supervision is **14 terms/4.7 years for PhD and 5.5 terms/1.9 years for MSc students**, which is lower than the departmental average as reported in the latest department review documentation. Given that the graduate program in the SFU Geography Department is mentorship-based, Suzana's students are immersed in their thesis research work for the entire duration under her direct supervision.

(C) Peer-Reviewed Journal Publications with Graduate Students between 2022-present:
Suzana has published 16 journal papers (plus one in the review process) with her graduate students in international peer-review journals. On average, her graduate students publish 2-3 papers from their MSc programs and 4-5 papers from their PhD programs. Papers published in the last six terms are as follows (*=graduate students): [1] *van Duynhoven A., Dragićević, S., (in preparation). Spatial sample weighted machine learning for multitemporal land cover change modeling with imbalanced datasets. *Big Earth Data,* [2] *Addae B., Dragićević, S., Zickfeld, K., Hall, P., 2024. Projecting multiclass global land-use and land-cover change using deep learning and spherical geographic automata model. *Big Earth Data*, [3] *Zhao, LQ., *van Duynhoven A., Dragićević, S., 2024. Machine Learning for Criteria Weighting in GIS-Based Multi- Criteria Evaluation: A Case Study of Urban Suitability Analysis. *Land,* [4] *van Duynhoven A., Dragićević, S., 2024. The Geographic Automata Tool: A New General-Purpose Geosimulation Extension for ArcGIS Pro. *Applied Sciences,* [5] *Smith A., Dragićević, S., (in review). Representing the dynamics of Southern Resident Killer Whales in the Salish Sea using a 4D geospatial agent-based model. *Environmental Management*, [6] *Munn K, Dragićević S. 2023. Towards a spatio-temporal multicriteria evaluation method: A suitability analysis of residential units in a 3D urban environment. *Transactions in GIS*. 27, 1830–1845, [7] *Addae, B., Dragićević, S., 2023. Modelling global deforestation using spherical geographic automata approach. *ISPRS International Journal of Geo-Information*, 12(8):306, [8] *van Duynhoven A, Dragićević S. 2023. A landscape metrics-based sample weighting approach for forecasting land cover change with Deep Learning models. *Geocarto International*. 2240283, [9] *Addae, B., Dragićević, S., 2023. Modelling global urban land-use change process using spherical cellular automata. *GeoJournal*. 88(3):2737-2754, [10] *Addae, B., Dragićević, S., 2023. Enabling geosimulations for global scale: Spherical geographic automata. *Transactions in GIS*. 27(3):821-840, [11] *Drackett, L., Dragićević, S., Salomon, A., 2023. Integrating multiple decision-making perspectives in marine spatial planning using the GIS-based Logic Scoring of Preferences method. *Ocean & Coastal Management*. 232, 106423, [12] *Addae, B., Dragićević, S., 2022. Integrating multi-criteria analysis and spherical cellular automata approach for modelling global urban land-use change. *Geocarto International*. 2152498, [13] *van Duynhoven A, Dragićević S. 2022. Mitigating imbalance of land cover change data for Deep Learning models with temporal and spatiotemporal sample weighting schemes. *ISPRS International Journal of Geo- Information*. 11(12):587, [14] *van Duynhoven A, Dragićević S. 2022. Assessing the impact of neighborhood size on temporal Convolutional Networks for modeling land cover change. *Remote Sensing*. 14(19):4957, [15] *Munn, K., Dragićević, S., Feick, R., 2022. Spatial decision-making for dense built environments: The Logic Scoring of Preference method for 3D suitability analysis. *Land*. 11(3), 443, [16] *Smith A., Dragićević, S. 2022. Map

comparison methods for three-dimensional space and time voxel data. *Geographical Analysis*. 54 (1), 149-172.

(D) Awards Obtained by Graduate Students: Her graduate students have recently obtained the following competitive awards: NSERC CGS-M 2023-24; NSERC CGS-D 2020-23; 2023-24 Canadian Pacific/Teck Resources Award; Best Presentation Award 2023 CAG-GIS Study Group; 2023 Michael Geller Graduate Scholarship in Urban Development; 2019-23 SFU Graduate Dean's Entrance Scholarship (GDES); SFU 2023 Esri Canada GIS Scholarship; 2021-22 SFU Canadian Pacific/Teck Resources Award; 2021-22 SFU Wayne Goeson Memorial Award.

(E) Graduate Courses Taught: Suzana taught the Geog 651 graduate course in Fall 2022, Fall 2024, and Spring 2025. She organized her Geog 451 and 651 students to participate in conferences such as the Esri Canada Virtual Seminar (November 14-17, 2022, and November 14, 2023) and SFU's GIS Day in 2023 and 2024 to learn advanced topics in GIS and to inspire undergraduate students to pursue graduate studies.

In summary, Suzana's extraordinary dedication to engaging students in Geography and GIScience courses, providing opportunities for students to excel beyond course settings, fostering an inclusive research lab group, continuous mentorship of graduate students, and ongoing contributions to the Geography research community transcend all the expectation of the *Eric Crighton Mentorship Award 2025*. The successes of her past and present graduate students affirm her excellence as a leader, mentor, supervisor, and role model. Working with her has undoubtedly shaped me as a scientist and as a person. Dr. Suzana Dragićević is an exemplary and ideal candidate for this award. She deserves to be recognized for her immense and constant efforts in mentoring students at our institution and beyond. Her mentorship has changed lives.

- Alysha van Duynhoven, BSc., MSc.