NAU NORTHERN ARIZONA UNIVERSITY

School of Informatics, Computing, and Cyber Systems

TO: Viacheslav (Slava) Fofanov, Director
CC: Truong X. Nghiem, Assistant Professor
FROM: *Annual Review Committee (FSC)*: J Jay Barber (chair), Wolf-Dieter Otte, Christopher Doughty, Michael Gowanlock, Venkata Yaramasu
School of Informatics, Computing, and Cyber Systems Faculty Status Committee (ARC): J Jay Barber (chair), Wolf-Dieter Otte, Troy Lee Adams, Christopher Doughty, Tara Furstenau, Michael Gowanlock, Toby D Hocking, Andrew Richardson, Volodymyr Vasylyovych Saruta, Igor F Steinmacher, Marc Tollis, Venkata Yaramasu
DATE: 10/ 24/ 2023

SUBJECT: Tenure and Promotion Review: Dr. Truong X. Nghiem

This letter serves to document the School of Informatics, Computing, and Cyber Systems (SICCS) Faculty Status Committee's evaluation of Dr. Truong X. Nghiem for promotion to Associate Professor with tenure. Dr. Truong X. Nghiem joined SICCS in Spring 2018 as a tenure-track Assistant Professor. His tenure clock started in AY2018-19.

Dr. Nghiem was evaluated with respect to criteria appropriate to his rank and career stage in each activity category and with a consideration of his allocation of effort. This evaluation is based on the material submitted by the faculty being evaluated in the Professional Review File (PRF) and in the Faculty Activity and Achievement Reporting (FAAR) system, and the SICCS Conditions of Faculty Service Guidelines (rev. 6/ 27/ 2018) ("SICCS CoFS"), as well as on the NAU Conditions of Faculty Service (COFS) guidelines, on the College of Engineering, Informatics, and Applied Sciences Process Guidelines for Annual Evaluation, Promotion, and Tenure, and this committee's observations and deliberations.

Student-related Activities

Student-related activities have comprised 15% to 30% (mean 24%) of Dr. Nghiem's workload during his time at NAU. Dr. Nghiem has taught 10 sections of regular lecture courses across both undergraduate and graduate levels (this excludes independent study and research courses), including new courses on Advanced Automatic Controls (EE559), Introduction to Autonomous Driving (EE499), and Modern Control Systems (EE599/ EE559), which have enriched Electrical Engineering course offerings in the area of control systems. He also taught existing courses such as the Automatic Controls (EE458) course. He completely re-designed these courses, each with significant hands-on and experiential learning components.

Dr. Nghiem has received excellent student feedback as evidenced by the high evaluation scores for his courses, even for newly developed courses, courses that he taught for the first time, and courses that are considered very challenging for students in the EE curriculum. He received 3.50/ 4.00 average for convened EE458/ EE558, and 3.75/ 4.00 average for EE599/ EE559. Student feedback praises Dr. Nghiem's high level of availability and mentorship, his knowledge in the subject matter, and his teaching methods. Some of the comments from the student evaluations are: "*I found the project we completed to be extremely interesting and very applicable to what we were learning in class*", "*To be honest, this was probably the hardest course that I have taken. However despite the course being hard, I enjoyed the care that my professor offered. You can tell that he truly cares about his students*", "*The manner in which the professor taught was very engaging and how open he was to questions was very helpful*",

"*The lecture slides were well structured, did not need a book at all*", and "*I love modern control. And I am glad that we have a responsible professor. He's very nice*". This demonstrates Dr. Nghiem's commitment to excellent learning experience for students in the classroom.

In addition to his teaching efforts, Dr. Nghiem has also invested significant student-related effort in mentoring students in his research group. Dr. Nghiem has mentored 49 students at NAU (10 undergraduate research students, 9 capstone project teams with 31 students in total, 8 MS students, and 3 PhD students). Dr. Nghiem has advised several PhD students. Notably, the committee was impressed that he published 6 papers that were led by one of his PhD students, but then this student (Viet-Anh Le) switched to the MS EE program and left NAU to pursue a PhD at the University of Delaware. Dr. Nghiem notes that NAU does not offer an EE PhD program and that the PhD in Informatics & Computing program (INF) is not attractive for prospective EE students. Furthermore, he notes that in AY24-25 the PhD INF program will offer an emphasis area in EE, which may help with student recruitment and retention in the future. He supervised 4 undergraduate students and 11 graduate students in individual study/ research courses. In total he has published 8 papers with his students (7 papers where students are the first author and 1 paper where students are co-authors). His students won a best presentation award, the NAU Presidential Fellowship, co-founded a U.S. robotics startup company, and became MS/ PhD students in prestigious U.S. graduate programs. All of these activities demonstrate that Dr. Nghiem is an excellent mentor. In addition to mentoring his own students, he has been on the thesis or dissertation committees of 5 students in SICCS, and the committee commends him for his membership on these committees.

Dr. Nghiem has also worked on program assessment and development through activities including ABET accreditation, EE curriculum review and improvement, a proposal for enhancing our PhD INF program, development of a new emphasis area in ECE in the PhD INF program, and other efforts such as a new certificate program in semiconductors. This is further evidence of Dr. Nghiem's excellence in EE program enhancement and commitment to his profession.

Dr. Nghiem's efforts demonstrate strong teaching effectiveness and a dedication to continuous pedagogical and subject matter improvements while his mentorship is clearly supportive of student success. The committee finds that Dr. Nghiem's achievements in student-related activities *exceed* the expectations for promotion to Associate Professor with tenure.

Scholarly Activities

Scholarly activities have comprised between 45% and 75% (mean 63%) of Dr. Nghiem's workload during his tenure-track years at NAU. He has excelled in this area by developing a well-funded and widely disseminated research portfolio and earning a solid reputation for conducting research in the field of intelligent cyber-physical systems.

Dr. Nghiem has been extremely active and successful in funding his scholarly efforts. He submitted 38 full proposals and secured over $10.7M of external funding during his appointment at NAU in the role of PI/ Co-PI with a total of roughly $2.3M under his management. The committee notes that these grants span a diverse portfolio of funding agencies, industry and professional communities including the National Science Foundation (NSF), Air Force Research Lab (AFRL), Salt River Project (SRP) utility company, and the Institute of Electrical and Electronics Engineers (IEEE), demonstrating that he has been opportunistic in applying for extramural funding. Dr. Nghiem has had 13 grant proposals awarded, including 5 as PI. His grant seeking success rate is commendable at 36%, which is quite high in his field. He is a recipient of the prestigious **NSF CAREER award** ($492K) and the **NSF ERI award** ($199K), both as a sole-PI. Many of Dr. Nghiem's grants include collaborators from SICCS, across campus and among US universities. This demonstrates Dr. Nghiem's commitment to the SICCS vision of engaging in interdisciplinary collaborations across campus and nation.

The results of his research have been published in 28 peer-reviewed papers (with 5 additional papers currently under review) in top-ranked journals and international conferences in his field. He was a lead

author on 13 papers and his students were co-authors on 10 papers. His publications have won a **best paper award** at a top conference in his field and a **best presentation award**. Dr. Nghiem has a highly cited portfolio of peer-reviewed publications. According to Google scholar he has an **h-index of 18**, **i10index of 27**, and **1208 total citations**. This is exceptional for his career stage and significantly exceeds the number of citations that most assistant professors have when they are up for promotion and tenure. Due to his scholarship accomplishments, he has been promoted to **senior member of the IEEE** (Institute of Electrical and Electronics Engineers).

Dr. Nghiem has developed a strong national and international scholarly reputation. Dr. Nghiem has been funded by grants with colleagues outside of NAU which clearly demonstrates national recognition in his field. He was a reviewer on three NSF panels, member of technical program committees, chair of several technical sessions at premier international conferences, and reviewer of several top-tier journals and international conferences. Dr. Nghiem has also given invited talks at the *Lawrence Berkeley National Laboratory, Florida International University, University of North Carolina at Charlotte, Old Dominion University, and Simon Fraser University (Canada)*. All of these activities demonstrate a strong national and international reputation in numerous scientific communities.

Dr. Nghiem's scholarly activities clearly demonstrate that he has established a pattern of extensive scholarly dissemination and demonstrated extramural funding successes to support his research program with an upward trajectory of leadership and independence. The committee finds that Dr. Nghiem's achievements in scholarly activities *exceed* the expectations for promotion to Associate Professor with tenure.

Service Activities

Service activities have comprised 10% of Dr. Nghiem workload since beginning his tenure-track position in AY2018-19 and he has made substantive and important contributions to both his profession and the institution. As a part of these efforts, he was a panelist for three NSF review panels, led the organization of and co-chaired a tutorial session at the 2023 American Control Conference, had membership on technical program committees, chaired or co-chaired technical sessions at premier conferences, and gave 5 invited talks. He also reviewed papers multiple times for 8 different journals and 9 different conferences.

At the institutional level, Dr. Nghiem has demonstrated strong engagement with important activities within the university community and critical unit-level priorities. He has served on numerous committees, including three Faculty Search Committees, the SICCS Annual Review Committee (ARC), the University Graduate Committee (UGC), the Academic Integrity Committee, the NAU Energy Action Team, and as a member and chair of ECE Undergraduate and Graduate Curriculum Committees, among others. These efforts span unit and university-wide service activities and clearly demonstrate Dr. Nghiem's commitment to the institution.

Dr. Nghiem's service activities clearly demonstrate that he has established a sustained pattern of service to the profession and institution with active and highly valued contributions in important activities within his profession and NAU and demonstrating evidence of promise for assuming leadership roles in this area. The committee finds that Dr. Nghiem's achievements in service activities *exceed* the expectations for promotion to Associate Professor with tenure.

Administrative Activities

Dr. Nghiem started working as an Assistant Chair of Electrical and Computer Engineering program of SICCS in AY 2022–2023 for 15% workload. In this role, he codeveloped proposals for improving the INF PhD program including an emphasis area in ECE and has been assisting the development of a new certificate program in semiconductors/ microelectronics.

The FSC/ ARC does not review these activities.

External Reviews
Two external "arms-length" reviewers and one of Dr. Nghiem's external collaborators offer strong and unanimous recommendations for Dr. Nghiem's promotion and tenure application, speaking positively of his teaching activities, scholarly portfolio and productivity, and reputation as a scholar in his field.

One reviewer states that "*Dr. Nghiem has an impressive record of extramural funding, including the prestigious NSF CAREER award. His number of citations and h-index are also remarkable for someone at this stage in their career*" and that "*it is impressive that Dr. Nghiem has exceeded almost all expectations in teaching, research, and service.*" Another reviewer states that: *(i) "by comparison, 10 peer-reviewed cumulative publications is a common standard for tenure and Truong published almost triple that number"; (ii) "among the key contributions Truong has made is a paradigm shifting methodology for designing and operating green energy processes";* and *(iii) "His 37% success rate on 38 proposals is above average and he has a 27% success rate with NSF. This is especially high considering funding rates are 7-15% for many NSF divisions*". Finally, the last reviewer states that "… *Dr. Nghiem has already distinguished himself among his peers at national level by winning the prestigious NSF CAREER Award*".

These external reviews make it clear that our positive assessment of Dr. Nghiem's record is consistent with national standards in use at institutions with institutional profiles comparable to or with higher research emphasis than NAU.

Overall Recommendation
During the years preceding his application for promotion to Associate Professor with tenure, Dr. Nghiem has demonstrated clear success, growth in productivity and accomplishment, and strong future promise in all three areas of activity. Dr. Nghiem's scholarly achievements are strong and provide a solid foundation for future leadership and achievement in his research area. He has exhibited clear dedication to effective teaching and mentoring the next generation of scholars in his field. Finally, he has demonstrated a commitment to effective engagement with and service to his professional and institutional community.

In sum, the committee finds that Dr. Truong X. Nghiem's achievements in student-related, scholarly, and service activities *exceed* expectations and strongly recommends his promotion to Associate Professor with tenure.