UNIVERSIDAD DE GRANADA

Departamento de Estadística e Investigación Operativa

Seminario 6 (SPA Series): Stochastic processes in software reliability

22/03/2025



Seminario del profesor **Tadashi Dohi** (School of Informatics and Data Science, Hiroshima University) en la **sala de conferencias del IMAG** . Dos sesiones, el **27 de marzo** de 2025, **de 9:30-11:00 y de 11:30 a 13:00.**

Las dos sesiones se desarrollarán sobre "**Stochastic processes in software reliability**"

Abstract

Software reliability engineering plays a central role to quantify software product reliability in the verification/validation phase before the release. During the last five decades, in fact, over two hundred software reliability models have been proposed in the literature. First, we quickly overview the software reliability modeling based on the software fault count data observed in the testing phase, where homogeneous Markov processes (HMPs) and non-homogeneous Poisson processes (NHPPs) have gained much popularity to assess quantitative software reliability. Next, we provide generalization frameworks on software reliability models, by introducing non-homogeneous Markov processes (NHMPs). Finally, we give some examples on non-Markovian process modeling, including geometric processes, trend renewal processes (TRPs) and Hawkes processes. We show how these generalized software reliability models can work better than the classical ones in terms of goodness-of-fit and predictive performances, through several empirical studies with actual software fault count data.

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Breve reseña sobre el profesor Tadashi Dohi:

Dr. Tadashi Dohi has served as a Full Professor at Hiroshima University, Japan, since 2002. He is currently appointed as Dean of School of Informatics and Data Science and Associate Dean of Graduate School of Advanced Science and Engineering, Hiroshima University. He received a Doctor of Engineering degree from Hiroshima University in 1995. His research interests include Software Reliability, Dependable Computing, Performance Evaluation, Operations Research. To date, his research has led to 280 journal papers, 340 peer-reviewed conference papers, 25 book editions, and 47 book chapters in the above research fields. Dr. Dohi is a Regular Member of IEICE, IPSJ, REAJ, a Fellow Member of ORSJ, and a Senior Member of IEEE (Computer Society and Reliability Society). He was acting President of REAJ in 2018 and 2019. He has served as the General Chair of 15 international conferences, including ISSRE 2011, ATC 2012, DASC 2019, and ICECCS 2022. Of note, he was a founding member of the Internationa Symposium on Advanced Reliability and Maintenance Modeling (APARM) and International Workshop on Software Aging and Rejuvenation (WoSAR). He has been a steering committee member in AIWARM/APARM, ISSRE, DASC, DSA. He has also worked as a program committee member in several premier international conferences such as DSN, ISSRE, COMPSAC, SRDS, QRS, EDCC, PRDC, HASE, SAC, ICPE, among numerous others. He is an Associate Editor/Editorial Board Member of over 20 international journals, including IEEE Transactions on Reliability.

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