ATILIM UNIVERSITY

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PERSONAL

Date of Birth	14/11/1985
Place of Birth	Çankırı

EDUCATION

2012-2017	Middle East Technical University, Institute of Applied Mathematics**, PhD,** Türkiye.
2008-2010	Ankara University, Department of Mathematics**, MSc,** Türkiye.
2004-2008	Ankara University, Department of Mathematics, **BS**, Türkiye.

ACADEMIC POSITIONS

2024 - present	Assistant Professor Dr., Computer Engineering, Atilim University, Türkiye.
01/09/2020-10/12/2023	Postdoctoral Research Fellow, Department of Mathematics University of Oslo, Norway.
04/03/2019-31/08/2020	Postdoctoral Research Fellow, Centre de Mathématiques Appliquées Ecole Polytechnique, France.
04/06/2018-03/08/2018	French Embassy Young Visiting Researcher, Centre de Mathématiques Appliquées, Ecole Polytechnique, France.
2018 (Spring semester)	Part-time Lecturer, Department of Mathematics, Bilkent University, Ankara, Türkiye.
2017 (Autumn semester)	Part-time Lecturer, Department of Mathematics, Ted University, Ankara, Türkiye.
2011-2017	Research Assistant, Department of Mathematics, Middle East Technical University, Ankara, Türkiye

ADMINISTRATIVE DUTIES

09/04/2025-…	Faculty Board Member, Atilim University, Engineering Faculty, Türkiye.

HONORS&AWARDS

1	French Embassy Young Visiting Researcher Fellowship, Centre de Mathématiques Appliquées, Ecole Polytechnique, France **04/06/2018 - 03/08/2018**
2.	Erasmus Student Mobility, Ecole Polytechnique, Centre de Mathématiques Appliquées Ecole Polytechnique, France, France **10/09/2013 - 01/04/2014**
3.	TÜBİTAK -BİDEB 2211 PhD Scholarship, 2011-2017, Türkiye.
4.	TÜBİTAK- BİDEB 2210 MSc Scholarship, 2008-2010, Türkiye.

RESEARCH INTERESTS

1.	Stochastic Optimal Control
2.	Reinforcement Learning
3.	Deep Learning
4.	Machine Learning
5.	Markov Regime-switches
6.	Time-Delayed Stochastic Differential Equations
7.	(Anticipated) Backward Stochastic Differential Equations
8.	Stochastic Differential Games
9.	Quantitative Finance

PUBLICATIONS

1	Savku E., An application of stochastic maximum principle for a constrained system with memory, Communications Faculty of Sciences University of Ankara Series A1 Mathematics and Statistics, (2025) Jan 1;74(1):150-61. DOI: https://doi.org/10.31801/cfsuasmas.1512961
2	Savku, E., An Approach for Regime-switching Stochastic Control Problems with Memory and Terminal Conditions, Optimization, 1–18. DOI: https://doi.org/10.1080/02331934.2024.2424442(2024)
3	Savku E., Memory and Anticipation: Two main theorems for Markov regime-switching stochastic processes, Stochastics: An International Journal of Probability and Stochastic Processes, (2024). DOI: https://doi.org/10.1080/17442508.2024.2427733

4	Savku E., Deep-Control of Memory via Stochastic Optimal Control and Deep Learning. In: Gayoso Mart´ınez, V., Yilmaz, F., Queiruga-Dios, A., Rasteiro, D.M., Mart´ın-Vaquero, J., Mierlu, s-Mazilu, I. (eds) Mathematical Methods for Engineering Applications. ICMASE 2023. Springer Proceedings in Mathematics & Statistics, vol 439. Springer, Cham. (2020). DOI: https://doi.org/10.1007/978-3-031-49218-1_16
5	Savku E., A Stochastic Control Approach for Constrained Stochastic Differential Games with Jumps and Regimes. Mathematics , 11, 3043, (2023). DOI: https://doi.org/10.3390/math11143043
6	Savku E., Fundamentals of Market Making via Stochastic Optimal Control, Operations Research - New Paradigms and Emerging Applications, CRC Taylor and Francis (2022). DOI: https://doi.org/10.1201/9781003324508-10
7	Savku E. and Weber G.-W., A Regime-Switching Model with Applications to Finance: Markov and Non-Markov Cases. Dynamic Economic Problems with Regime Switches, 13, Springer Nature Switzerland AG, (2020). DOI: https://doi.org/10.1007/978-3-030-54576-5_13
8	Laurelle S., Rosenbaum M. and Savku E., Assessing MiFID 2 Regulation on Tick Sizes: A Transaction Costs Analysis Viewpoint , Market Microstructure and Liquidity, Vol. 1, 2050003 (27 pages) @ World Scientific Publishing Company (2020).DOI: https://doi.org/10.1142/S2382626620500033
9	Savku, E., Weber, G.-W. Stochastic differential games for optimal investment problems in a Markov regime-switching jump-diffusion market. Annals of Operations Research 312, 1171–1196 (2022). DOI: https://doi.org/10.1007/s10479-020-03768-5
10	Savku E. and Weber G.-W., A Stochastic Maximum Principle for a Markov Regime- Switching Jump-Diffusion Model with Delay and an Application to Finance , Journal of Optimization Theory and Applications, Springer, vol. 179 (2), pages 696-721, (2018). DOI: https://doi.org/10.1007/s10957-017-1159-3
11	Savku E., Azevedo N. and Weber G.-W., Optimal Control of Stochastic Hybrid Models in the Framework of Regime Switches. International Conference on Dynamics, Games and Science, DGS 2014: Modeling, Dynamics, Optimization and Bioeconomics II, Springer Proceedings in Mathematics and Statistics Series Volume 195, pp 371-387, (2017). DOI: https://doi.org/10.1007/978-3-319-55236-1_18

PROJECTS

1	A Stochastic ContROL approach to machine Learning with applications to Environmental Risk models, SCROLLER, Norwegian Research Council, Researcher, **01/09/2020-10/12/2024**
2	Analytics and Models for Regulation Statistical Modeling across Price and Time Scales: A quantitative approach to modern financial regulation, Researcher, **04/03/2019-31/08/2020**

CITATIONS

Citations:	218 WoS (without self-citations)
H-index:	3 WoS

COURSES GIVEN

6.	Introduction to Machine Learning for Engineers
5.	Computer Programming (C programming)
4.	Discrete Computational Structures
3.	Probability Theory (Graduate level)
2.	Calculus with Analytıcal Geometry I-II
1.	Introduction to Diffrential Equations

INVITED TALKS

8.	E. Savku, A Business Agreement via Stochastic Differential Games, 5th Ankara-Istanbul Stochastic Days, Ozyegin University, invited by *Assoc.Prof. Dr. Mehmet Öz*, Istanbul, Türkiye, June 12-13, 2025.
7.	E. Savku, An Application of Stochastic Maximum Principle with Regimes and Memory, Quantitative Finance Seminar, invited by *Assist. Prof. Chenchen Mou*, joint work with G. W. Weber, Jiangsu, China, October 14, 2021.
6.	E. Savku, Stochastic Optimal Control Techniques for a Regime-Switching Model with Applications in Finance, Felix Klein Autumn Workshop: Optimization and Machine Learning, Fraunhofer ITWM, invited by *Prof. Dr. Karl-Heinz Küfer,* joint work with G. W. Weber, Kaiserslautern, Germany, September 14-16, 2021.
5.	E. Savku, Portfolio Strategies via Stochastic Differential Games with Regimes, SPOR Seminars - Statistics, Probability, Operational Research Seminars, Atılım University, invited by *Prof Dr Serkan Eryılmaz*, joint work with G. W. Weber, Ankara, Türkiye, March 18, 2021.
4.	E. Savku, Stochastic Differential Games within the framework of Regime-Switches, International Conference: Dynamic Control and Optimization (DCO 2021), invited by *Assoc. Prof. Dr. Tatiana Tchemisova*, joint work with G. W. Weber, Aveiro, Portugal, February 3-5, 2021.
3.	E. Savku, Optimal investment strategies in a Markov Regime-Switching Market, STAR Seminars of University of Oslo, Department of Mathematics, Stochastic and Risk Research Group, invited by *Prof Dr Kristina Rognlien Dahl*, joint work with G. W. Weber, Oslo, Norway, September 25, 2020.
2.	E. Savku, A Stochastic Maximum Principle for a Markov Regime-Switching Jump-Diffusion Model with Delay and an Application to Finance, DFG-Research Training Group 1932, Technische Universitat Kaiserslautern, joint work with G. W. Weber, invited by *Prof. Dr. Ralf Korn*, Germany, January 18, 2018.
1.	E. Savku, A Stochastic Optimal Control Problem in a Regime-Switching Jump-Diffusion Market, Department of Mathematics, University of Aveiro, invited by *Assoc. Prof. Dr. Tatiana Tchemisova*, joint work with G. W. Weber, Portugal, May 16, 2016.

CONFERENCE PRESENTATIONS

21	E. Savku, Algoritmik Alım-Satım: Stokastik Optimal Kontrol ve Derin Pekiştirmeli Öğrenme Teknikleriyle, 16. Ankara Matematik Günleri (AMG 2025) - Çankaya Üniversitesi, Ankara, Turkiye.
20	E. Savku, A Nonzero-Sum Regime-Switching Stochastic Differential Game Application with Constaints, Southern Africa Mathematical Sciences Association (SAMSA) Conference, Pretoria, South Africa, November 21-24, 2023.
19	E. Savku, A Stochastic Maximum Principle Approach for a Nash Equilibrium of a Nonzero- Sum Game, IV International Conference on Mathematics and its Applications in Science and Engineering (ICMASE 2023), Madrid, Spain, July 12-14, 2023.
18	E. Savku, Stochastic Maximum Principle For A Constraint Nonzero-Sum Game Application: Bancassurance, The 10th International Workshop on Applied Probability (IWAP2023), Thessaloniki, Greece, June 7-10, 2023.
17	E. Savku, An Application of Nonzero-Sum Stochastic Differential Games in Finance, Recent Developments in Stochastics with Applications in Mathematical Physics and Finance, Hammamet, Tunisia, October 16-21, 2022.
16	E. Savku, An Application of Markov Regime-Switching Models: Bancassurance, STORM Workshop 2022, Oslo, Norway, September 5-8, 2022.
15	E. Savku, A Nonzero-Sum Game Application: Bancassurance, International Conference on Optimization and Decision Science (ODS2022), Florence, Italy, Agust 29 - September 2, 2022.
14	E. Savku, An Application of Stochastic Differential Games with Lagrange Multipliers: Bancassurance, Euro 2022, Espoo, Finland, July 3-6, 2022.
13	E. Savku, A Constrained Nonzero-Sum Stochastic Differential Game Application, 11th World Congress of the Bachelier Finance Society, Hong Kong, China, June 13-17, 2022.
12	E. Savku, An Application of Stochastic Differential Games with Lagrange Multipliers: Bancassurance, ECCO XXXV - CO 2022 Joint Conference, virtual, June 9-11, 2022
11	E. Savku, A constrained stochastic differential game application: Bancassurance, Workshop: Stochastic Games and Martingale Optimal Transport, Milan, Italy, May 5-6, 2022.
10	E. Savku, A Nonzero-sum Game Formulation for a Markov Regime-Switching PortfolioM Strategy, SIAM Conference on Control and its Applications (CT21), joint work with G. W. Weber, Washington, USA, July 19-21, 2021.
9	E. Savku, Stochastic Maximum Principle with Regimes and Memory, EUROPT 2021 18th Workshop on Advances in Continuous Optimization, joint work with G. W. Weber, Toulouse, France, July 7-9, 2021.
8	E. Savku, Stochastic Differential Games via Dynamic Programming Principle with Regimes, 10th General AMaMeF Conference, joint work with G. W. Weber, Padua, Italy, June 22-25, 2021.
7	E. Savku, An Optimal Consumption Problem with Regimes and Memory, 9th General AMaMeF Conference, joint work with G.W. Weber, Paris, France, June 11-14, 2019.
6	E. Savku, Stochastic Differential Games of Optimal Portfolio Strategies with Regime- Switches, International Conference Dynamic, Games and Science, CIRM, joint work with G. W. Weber, Marseille, France, 3-7 June 2019.
5	E. Savku, An Optimal Consumption Problem For a Stochastic Hybrid Model with Delay, SIAM Conference on Control and its Applications (CT17), joint work with G. W. Weber, Pittsburgh, Pennsylvania, USA, July 10-12, 2017.

4	E. Savku, Kısmi Bilgi Altında Rejim Degisimli Sicrama-Difuzyon Modeli için Stokastik Maksimum Prensibi ve Finansa Bir Uygulaması, 29. Ulusal Matematik Sempozyumu, joint work with G. W. Weber, Mersin, Türkiye, August 28-31, 2016.
3	E. Savku, Stokastik Hibrit Sistemlerde Optimum Kontrol ve Finansal Uygulamaları, 11. Ankara Matematik Gunleri, joint work with G. W. Weber, Ankara, Türkiye, May 26-27, 2016.
2	E. Savku, Optimal Control of Delayed Jump-Diffusions with Regimes and An Application to Finance, 57th EURO Working Group for Commodities and Financial Modeling, University of Coimbra, joint work with G. W. Weber, Portugal, May 12-14, 2016.
1	E. Savku, Optimal Control of Stochastic Hybrid Models with An Application to Finance, 27th European Conference on Operational Research, joint work with G. W. Weber, Glasgow, UK, July 12-15, 2015.

POSTER PRESENTATIONS

1	E. Savku, Maximum Principle For A Delayed Stochastic Hybrid Model and An Application to Finance, Vienna Congress on Mathematical Finance (VCMF 2016), joint work with G. W. Weber, Austria, September 12-14, 2016.
2	E. Savku, Optimal Control of Stochastic Hybrid Delayed Models, 2nd Ankara-Istanbul Workshop on Stochastic Processes, Istanbul, Türkiye, joint work with G. W. Weber, June 18-19, 2015.

MEMBERSHIP OF ACADEMIC/SCIENTIFIC SOCIETIES

26/09/2022 - present	NORA: Norwegian Artificial Intelligence Research Consortium - Research School Membership
01/01/2016 – 31/12/2017	SIAG: Society for Industrial and Applied Mathematics Activity Groups - Membership on Financial Mathematics and Engineering
01/01/2016 – 31/12/2017	SIAG: Society for Industrial and Applied Mathematics Activity Groups - Membership on Optimization