Ali Tivay | Resume

✉ tivay@umd.edu

Education

University of Maryland, College Park — **MD, USA**
PhD Student in Mechanical Engineering (3rd Year; Advisor: Dr. Jin-Oh Hahn) — *2017-present*

Amirkabir University of Technology - Tehran Polytechnic — **Tehran, Iran**
Master of Science in Mechanical Engineering - Mechatronics — *2015*

Amirkabir University of Technology - Tehran Polytechnic — **Tehran, Iran**
Bachelor of Science in Mechanical Engineering - Manufactring — *2012*

Graduate Coursework

Dynamic Systems and Control: Advanced Engineering Mathematics, Applied Nonlinear Controls, Robust Control, Network Control Systems, Adaptive Control and Learning Theory, Advanced Robotics, Mechatronics I-II (Sensors, Actuators, and Systems Engineering)

Modeling and Data Analysis: Machine Learning Theory and Applications, Computational Intelligence, Engineering Optimization, Data-Driven Modeling and Estimation in Dynamical Systems, Applied Stochastic Processes, Digital Signal Processing

Employment History

Graduate Research Assistant — **MD, USA**
Laboratory for Control and Information Systems, University of Maryland — *2017-present*
- Conducting Research on Mathematical Modeling and Control of Physiological Processes
- Mathematical Modeling of Blood Volume Kinetics and Cardiovascular Hemodynamics
- Developing Methodologies to Generate Physiologically Plausible Virtual Patients Based on Data

Software Engineer — **Tehran, Iran**
Nooranium Studios — *2015-2017*
- Produced Real-Time and Data-Driven Communication Services for Web/Mobile Applications
- Designed and Managed Server-Side Code and Databases for Optimal Speed, Stability and Security

Graduate Research Assistant — **Tehran, Iran**
New Technologies Research Center, Amirkabir University of Technolgy — *2012-2015*
- Conducted Research on Actuator Energy-Efficiency, Fault-Tolerance and Control
- Proposed Energy-Saving and Fault-Tolerant Designs for Fluid-Power and Piezoelectric Actuators

Journal Publications

[Under Review] —
A. Tivay, X. Jin, A. Lo, C. G. Scully, J. Hahn
Practical Use of Regularization in Individualizing a Model of Cardiovascular Hemodynamics Using Scarce Data

[Under Review] —
G. Arabi Darrehdor, A. Tivay, R. Bighamian, C. Meador, G. C. Kramer, J. Hahn, J. Salinas
Mathematical Model of Volume Kinetics and Renal Function after Burn Injury and Resuscitation

Frontiers in Physiology — **Frontiers**
A. Mousavi, A. Tivay, B. Finegan, M. S. McMurtry, R. Mukkamala, J. Hahn — *2019*
Tapered versus Uniform Tube-Load Modeling of Blood Pressure Wave Propagation in Human Aorta

ISA Transactions — **Elsevier**
M. Fallahi, M. Zareinejad, K. Baghestan, A. Tivay, SM. Rezaei, A. Abdullah — *2018*
Precise Position Control of an Electro-Hydraulic Servo System via Robust Linear Approximation

ISA Transactions **Elsevier**
S. Sharifi, A. Tivay, SM. Rezaei, M. Zareinejad, B. Mollaei-Dariani *2017*
Leakage Fault Detection in Electro-Hydraulic Servo Systems using a Nonlinear Representation Learning Approach

P. IMechE, Part E: Journal of Process Mechanical Engineering **SagePub**
A. Saeedzadeh, A. Tivay, M. Zareinejad,S. M. Rezaei, A. Rahimi, K. Baghestan *2016*
Energy-Efficient Hydraulic Actuator Position Tracking using Hydraulic System Operation Modes

Journal of Intelligent Material Systems and Structures **SagePub**
M. Ghanbarbakhsh, SM. Rezaei, M. Zareinejad, A. Tivay, AADM. Sarhan *2015*
A Novel Rate-dependent Hysteresis Modeling and Position Control Technique for Piezo-actuated Bimorph Beams

P. IMechE, Part I: Journal of Systems and Control Engineering **SagePub**
R. Nourizadeh, SM. Rezaei, M. Zareinejad, K. Baghestan, A. Tivay, M. Saadat. *2015*
Robust Hydraulic Actuator Force Control Through Relief Discharge

ISA Transactions **Elsevier**
A. Tivay, M. Zareinejad, S. M. Rezaei, K. Baghestan. *2014*
A Switched Energy Saving Position Controller For Variable-Pressure Electro-Hydraulic Servo Systems

Selected Conference/Workshop Presentations

[Accepted] The 2020 American Control Conference (ACC) **IEEE**
A. Tivay, G. C. Kramer, J. Hahn *2020*
Virtual Patient Generation using Physiological Models through a Compressed Latent Parameterization

The 2019 American Control Conference (ACC) **IEEE**
A. Tivay, G. Arabi Darrehdor, R. Bighamian, G. C. Kramer, J. Hahn *2019*
A Regularized System Identification Approach to Subject-Specific Physiological Modeling with Limited Data

The 2019 Embedded Systems Week: CyberCardia Medical CPS Workshop **ACM**
A. Tivay, J. Hahn *2019*
Modeling Cardiovascular Responses to Fluid Perturbation: Individualization and In-Silico Subject Generation

International Conference on Robotics and Mechatronics **IEEE**
A. Tivay, S. M. Rezaei, M. Zareinejad, K. Baghestan *2013*
Energy-Saving Cooperative Position Tracking Control of Electro-Hydraulic Servo Systems

Honors

Future Faculty Program Fellow **2020**
A. James Clark School of Engineering, University of Maryland

Student Travel Award **2019**
The 2019 American Control Conference

Graduate Dean's Fellowship Award **2017**
Graduate School, University of Maryland

Academic Service

Served as Peer-Reviewer for Journal Manuscripts in Control, Fault-Tolerance and Fluid Power
ISA Transactions (Elsevier), Nonlinear Dynamics (Springer), and Advances in ME (SAGE)

Served as Peer-Reviewer for Conferences in Control and Cyber-Physical Systems
DSCC-2018, ICCPS-2020, ACC-2020, EMBC-2020

Relevant Skills

Programming Languages: MATLAB, Python, Ruby, Javascript (Node.js), C++

Engineering Software: Simulink, LabVIEW, Proteus, SolidWorks, CATIA

Hardware: Data-Acquisition (dSPACE), Basic Electronics and PCB Design, Microcontrollers (PIC, AVR)

Physiology: Blood Volume Kinetics, Cardiovascular Physiology, Burn and Trauma Physiology

Machine Learning: Scikit-learn, Tensorflow