

Kasra Nezamabadi

Contact Information

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Research Interests

- Machine Learning
- Deep Learning and Convolutional Neural Network
- Computer Vision and Image Processing
- Pattern Recognition
- Big Data techniques on Machine Learning
- Problems Machine Learning Applications

Current Study

- ❖ Heart ECG analysis to detect HCM disease using machine learning techniques.
 - In Computational Biomedicine and Machine Learning Lab. University of Delaware
 - Supervisor: Prof. Hagit Shatkay

Education

MSc. Artificial Intelligence

Sep. 2015 – Oct. 2017

[K.N.Toosi University of Technology, Tehran, Iran](#)

Total Grade Point Average: **18.00/20 (4.0/4.0) (Ranked 1st)**

- 1st Semester: 17.62/20 (4.0/4.0) (Ranked 3rd)
- 2nd Semester: 17.83/20 (4.0/4.0) (Ranked 2nd)
- 3rd Semester: 17.88/20 (4.0/4.0) (Ranked 1st)

- 4th Semester: 19.0/20 (4.0/4.0) (Master Thesis)

Relevant Course works:

- Machine Learning (18.5/20) (GPA 4) (Ranked 3rd)
- Artificial Neural Network (17.45/20) (GPA 4) (Ranked 5th)
- Multi-agent Systems (18.4/20) (GPA 4) (Ranked 2nd)
- Big Data and Hadoop (17/20) (GPA 4) (Ranked 5th)
- Digital Image Processing (16.2/20) (GPA 4.0) (Ranked 4th)
- Evolutionary Computing (17.65) (GPA 4) (Ranked 3rd)
- Reinforcement Learning (18.5/20) (GPA 4) (Ranked 1st)
- Cloud Computing (17/20) (GPA 4.0) (Ranked 6th)

BSc. Computer Engineering

Sep. 2011 – Aug. 2015

[K.N.Toosi University of Technology, Tehran, Iran](#)

Total Grade Point Average: **16.92/20 (4.0/4.0) (Ranked 5th)**

Relevant Course works:

- Discrete Mathematics (17.25/20)
- Probability & Statistics (18.7/20)
- Numerical Optimization (17.75/20)
- Electrical Circuits Theory (16.5/20)
- Principle of Operating Systems (19/20)
- Computer System Architecture (19.5/20)
- Principle of Artificial Intelligence (17/20)
- Algorithms and Data Structure (16.5/20)
- Compilers (19/20)
- Software Engineering (18/20)

High School Diploma in Mathematics and Physics

Sep. 2007 – Aug. 2011

[Mofid High School](#)

Total Grade Point Average: **19.37/20 (4.0/4.0)**

Research Experience

❖ Research Assistant

Summer 2017

- Role: Automatic scoring of lung HRCT patterns in Cystic Fibrosis using Convolutional Neural Network. Classifying Bronchiectasis patterns into

4 different classes based to which the severity of Cystic Fibrosis disease is defined.

- At: [Computer Vision and Medical Image Processing Lab, K.N.Toosi University. Cystic Fibrosis Center, Tehran University of Medical Science.](#)

❖ **Research Assistant (Team Leader)**

Jan. 2016 – Sep. 2017

- Role: Lung HRCT pattern classification for Cystic Fibrosis using Convolutional neural network. Building patch-based dataset of CF inspiratory lung HRCT scans and classifying patterns into 3 different classes were the most important phases in this project.
- Under the supervision of Prof. Hamid Abrishami Moghaddam and advisory of Prof. Mohammadreza Modarresi (Tehran University of Medical Science)
- At: [Computer Vision and Medical Image Processing Lab, K.N.Toosi University. Cystic Fibrosis Center, Tehran University of Medical Science.](#)

❖ **Paper Revision Coordinator**

Jan. 2016 – Sep. 2017

- Role: Gathering data of lung HRCT images for interstitial lung disease. Management of labeling images with the cooperation of several resident radiologists. Completing training dataset for a specific algorithm. Revision of paper " A Computer-Aided System Based on Compressive Sensing for Interstitial Lung Pattern Analysis in Three Dimensional High Resolution Computerized Tomography" , Journal of Biomedical and Health Informatics.
- Under the supervision of Prof. Hamid Abrishami Moghaddam and advisory of Prof. Kahkoohi. (Tehran University of Medical Science)
- At: [Computer Vision and Medical Image Processing Lab, K.N.Toosi University. Medical Imaging Center, Imam Khomeini Hospital Complex, Tehran University of Medical Science](#)

Teaching Experience

❖ **Teaching Assistant of Big Data and Hadoop Framework (MSc. Course)**

- Prof. S. Hossein Khasteh, K.N.Toosi University

- ❖ **IEEE Lead Instructor in Deep Learning Workshop** Summer 2017
 - K.N.Toosi University of Technology, IEEE Iran Section
 - Deep Learning workshop was held with the cooperation of IEEE Iran section in K.N.Toosi University of technology. I was the leading instructor in this 10-session workshop

- ❖ **Teaching Assistant of Machine Vision** Spring 2017
 - Prof. Behrooz Nasihatkon, K.N.Toosi University

- ❖ **Teaching Assistant of Algorithms and Data Structures** Spring 2014
 - Prof. Amin Nikanjam, K.N.Toosi University

- ❖ **Teaching Assistant of Java Advanced Programming** Spring 2013
 - Prof. Saeed Seddighian, K.N.Toosi University

- ❖ **Teaching Assistant of Computer System Architectures** Spring 2013
 - Prof. Babak Nasersharif, K.N.Toosi University

Honors

- ❖ **1st Rank Student Graduated from K.N.Toosi University of Technology**
 - I have the honor to be the first rank student among other students in artificial intelligence major graduated from K.N.Toosi University of Technology.

- ❖ **PhD Full Scholarship at University of Delaware**
 - I was the selected student who can pursue his PhD in Computer Science with full scholarship at University of Delaware.

- ❖ **Creator of Dataset of Lung Inspiratory HRCT of Iranian Cystic Fibrosis Patients**
 - After 2 years of data engineering and cooperation with several expert radiologists, I have the honor to claim that I have built the “Patch-based Dataset of Lung Inspiratory HRCT of Iranian Cystic Fibrosis Patients”. This dataset can be of great aid for learning algorithms. Researchers in Computer Vision and Medical Image Processing Lab is currently working with this dataset and train their models.

❖ **IEEE Certificate of Appreciation**

- I was the lead instructor in the Deep Learning workshop held at K.N.Toosi University with the cooperation of IEEE Iran section in May 2017.

Papers

❖ **Accepted Paper, Springer Journal of Signal, Image and Video Processing**

- Kasra Nezamabadi , Zeinab Naseri Samaghcheh, Hamid Abrishami Moghaddam, Mohammadreza Modarresi, Neda Pak, Mehrzad Mahdizade. "Lung HRCT Pattern Classification for Cystic Fibrosis using Convolutional Neural Network". SIVP-D-18-00600

❖ **Revision of Paper: IEEE Journal of Biomedical and Health Informatics**

- "A Computer-Aided System Based on Compressive Sensing for Interstitial Lung Pattern Analysis in Three Dimensional High Resolution Computerized Tomography", IEEE J-BHI

Professional Membership

❖ **Active Member in Cystic Fibrosis Research Team**

- [CF Center at Tehran University of Medical Science](#)
- Within 2 years of research and data engineering, I managed to build a dataset of lung inspiratory HRCT patterns of Iranian Cystic Fibrosis patients; to the best of my knowledge, this is the first dataset built for the specific purpose.

Conference Attendance

❖ **Financial Technology Festival (FintechFest)**

- [Fanap Co.](#)
- My team with my leadership presented an automatic fraud detector algorithm for bank accounts in Financial Technology Festival held on 8th to 10th March 2017, Tehran Iran. Our idea and our first demo were within 5 selected premier projects in the festival.

Certificates

- ❖ **Improving Deep Neural Networks: Hyper-parameter tuning, Regularization and Optimization** Sep. 2017
 - Coursera Course Certificate, deeplearning.ai
 - Instructor: Prof. Andrew Ng
 - License DWNGGZ3ZP9YL
 - Grade: 95/100

- ❖ **Neural Networks and Deep Learning** Sep. 2017
 - Coursera Course Certificate, deeplearning.ai 09-20-2017
 - Instructor: Prof. Andrew Ng
 - License GRV64F9MT24T
 - Grade: 100/100

- ❖ **Machine Learning, Online Stanford University** Jan. 2016
 - Coursera Course Certificate. Stanford University
 - Instructor: Prof. Andrew Ng
 - License RJ7232TEBJ3M
 - Grade: 96/100

Skills

- ❖ **Programming Languages**
 - Python Advanced Programming
 - Swift Advanced Programming (iOS App Development)
 - Java
 - .Net
 - C / C++

- ❖ **Professional Implementations and Frameworks**
 - Advanced TensorFlow Programming
 - Advanced Theano Programming
 - Convolutional Neural Network Implementation
 - Machine Learning Algorithms Implementation
 - Big Data and Hadoop
 - Cloud Computing in Machine Learning Applications
 - Evolutionary Algorithms Implementation
 - iOS App Developing
 - Database Management

- Matlab

❖ Others

- Team Working
- Teaching Skills
- Self-Reliant with Strong Management
- Personal Communication
- Presentation Skills

Language Proficiency

- English (Fluent)
- Persian (Native)
- Arabic (Familiar)

Latest Projects

- 1. Convolutional Neural Network to classify Cystic Fibrosis lung HRCT patterns using, Python, TensorFlow**
 - Achieving accuracy of ~95.3% and sensitivity and specificity of ~95.3 and ~97.6, respectively.
- 2. Convolutional Neural Network to Automatic Scoring Cystic Fibrosis lung HRCT patterns using, Python, TensorFlow**
 - Achieving accuracy of ~74.3%. (In Progress)
- 3. Convolutional Neural Network to Recognize Persian Handwritten Digits using Python, Theano**
 - Achieving 97% accuracy on a 20,000 sample dataset
 - Exporting network parameters into an iOS app and building a keyboard to recognize handwritten Persian digits.
- 4. Convolutional Neural Network to recognize ILD Disease patterns in lung HRCT images in 3D Voxel Patches (In Progress)**
- 5. PayMa, Social Mobile Banking App at Dotin, Fanap Co.**
 - Link: <http://payma.ir>

6. Implementation of Neural Network to Recognize MNIST Handwritten Digits

7. Design and Implementation of Plagiarism Detector Software

- Undergraduate Final Project
- Design and implementation of plagiarism detector software to detect and report plagiarism probability of a given document using Google Search Engine in C#.

8. Recommender System based on Movie Ratings

- From MovieLens 100k Dataset from GroupLens Research. This dataset consists of ratings on a scale of 1 to 5. The dataset has 943 users, and 1682 movies.

9. Anomaly Detection Application to Detect Anomalous Behavior in Server Computers

- The features measure the throughput (mb/s) and latency (ms) of response of each server. Dataset consists of 307 examples.

10. Spam Filter using Support Vector Machine (SVM)

- Implementation of a spam filter with Support Vector Machine (SVM) to classify spam ($y=1$) and non-spam ($y=0$) emails. The dataset is based on a subset of the SpamAssassin Public Corpus, available at:
<http://spamassassin.apache.org/publiccorpus/>

11. Image compression using K-Means Algorithm

References

❖ Professor Hamid Abrishami Moghaddam

- Full Professor of EE Dept., K.N.Toosi University
- Supervisor of my master thesis at K.N.Toosi University
- Phone: +989121157177
- Email: moghaddam@kntu.ac.ir
- Website: <http://wp.kntu.ac.ir/moghaddam/>

❖ Professor Mohammadreza Modarresi

- Associate Professor, Tehran University of Medical Science

- Advisor of my master thesis.
- Tel.: +989131134710
- Email: mr-modaresi@sina.tums.ac.ir

❖ **Professor Mohammad Teshnehlab**

- Full Professor of EE Dept., K.N.Toosi University
- Professor of my courses
- Email: teshnehlab@eetd.kntu.ac.ir
- Website: <http://wp.kntu.ac.ir/teshnehlab>

❖ **Professor Amin Nikanjam**

- Assistant Professor of CS Dept., K.N.Toosi University
- Professor of my courses, T.A. of his course
- Email: nikanjam@kntu.ac.ir
- Website: <http://wp.kntu.ac.ir/nikanjam>

❖ **Professor Hossein Khasteh**

- Assistant Professor of CS Dept., K.N.Toosi University
- Professor of my courses, T.A. of his course
- Email: khasteh@kntu.ac.ir
- Website: <http://wp.kntu.ac.ir/khasteh>

❖ **Professor Ali Ahmadi**

- Assistant Professor of CS Dept., K.N.Toosi University
- Professor of my courses
- Email: ahmadi@kntu.ac.ir
- Website: <http://wp.kntu.ac.ir/ahmadi>