

# Mohammadhadi Karimi

*Power Electronics Engineer*

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## Education

- 2008–2011 **Electrical Engineering Department of K. N. Toosi University of Technology** , *M.Sc.*, Power Electronics and Electrical Machines,  
**Thesis Subject:** Design and Implementation of a Sensor-Less Vector Control Drive for Permanent Magnet Synchronous Motor Based on the Extended Kalman Filter, *GPA:4.4/5*
- 2003–2008 **Faculty of Engineering, University of Isfahan** , *B.Sc.*, Electrical Engineering, ,  
**Thesis Subject:** Voice Compression and Decompression Based on the ADPCM (Adaptive Differential Pulse Code Modulation) algorithm. *GPA:3.75/5*

## Experience

- 2014–present **Head of Power Electronics and Drive Research Group**, *Academic Center of Education Culture and Research (ACECR), K. N. Toosi branch, Tehran, Iran,*
- 2012–present **Research fellow**, *Academic Center of Education Culture and Research (ACECR), K. N. Toosi branch, Tehran, Iran.,* Research, design and development of:
- 1.5 kW grid-tied inverter for renewable energy applications.
  - 0.75 kW, 1.5 kW, 2.2 kW Variable Frequency Drive (VFD) for induction motors.
  - 7 kW vector control drive of a direct-torque Permanent Magnet Synchronous Motor (PMSM) for elevator applications - speed and position control.
  - 3 kW AC-DC boost Power Factor Correction (PFC) converter.
  - Rotor-side current control of wound induction machines for turbine generators (V47) based on VESTAS technology.
  - 400 Hz, 5 kW, 4-leg inverter with the capability to supply unbalanced 3-phase loads.
  - Sensorless vector control of 7.6 kW Counter-Rotating PMSM (CR-PMSM) based on Extended Kalman Filter (EKF).
  - 30 A, 1.2 kW current-source switching power supply.
  - 7.6 kW PMSM prototype with minimization of the cogging torque.
  - 35 kVA Static var Compensation (STATCOM).
- 2010–2012 **Research Assistant**, *Lab of Power Electronics and Electrical Machines, K. N. Toosi University of Technology,* Research Focusing on PMSM Drive, Project title: *Design and Implementation of Sensor-Less Vector Control Drive for axial-PMSM Based on Extended Kalman Filter.*

## Teaching experience

- 2019–present **Teaching Assistant**, *Lab of electrical machines, K. N. Toosi University, Tehran, Iran,* *DC motors, induction motors and synchronous motors.*
- 2016–2018 **Teaching**, *Lab of electrical machines, University of Science and Culture, Tehran, Iran,* *DC and AC Machines,*

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## Publications

- Journal **Karimi, M.H., Zamani, H., Kanzi, K. Farahani, Q.V**, *Implementation of a 35KVA Converter Base on the 3-Phase 4-Wire STATCOM for Medium Voltage Unbalanced System*, Journal of Power Electronics, Vol. 13, No. 5, September 2013.
- Conference **Karimi, M.H., Zamani, H., Abbaszadeh, K., Hemmati, S.** , *DSP-based optimal sensorless vector control drive for axial-flux PM motor*, International Conference on Power Engineering, Energy and Electrical Drives, 2011, pp. 1-6, doi: 10.1109/PowerEng. 2011.6036478
- Conference **Zamani, H., Karimi, M.H., Kanzi, K. and Vasheghani, Q.**, *Vector control of counter-rotating permanent magnet synchronous motor for underwater propulsion application*, International IEEE Conference on Power Electronics, Drive Systems and Technology (PEDSTC). (pp. 44-48), 2013.
- Conference **Karimi, M.H., Zamani, H., Farahani, Q.V**, *Design and Construction of 400 Hz four-leg inverter with improved dynamic response*, international Conference Recent Innovations in Electrical and Computer Engineering, 2016.

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## Research interests

Electrical machine drives (PMSMs and Induction motors)  
Advanced controllers for power electronics applications  
Shunt and series active filters  
Switching power supplies  
Renewable energies  
Multilevel inverters

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## Computer Skills

Code Composer Studio (CCS),Keil, Code-Vision  
PSIM, Orcad, Proteus  
MATLAB/Simulink  
Altium Designer  
Microsoft office (Excel, Word, PowerPoint), L<sup>A</sup>T<sub>E</sub>X

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## Reference

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