Professional Experience

2011 – :Research Assistant-Istanbul Technical University Mechanical Engineering Department

2009 – :Researcher - MEAM(Mechatronics Education and Research Center), Istanbul Technical University

- Autonomous- Semi Autonomous Vehicle Development (In MEAM): I have been working on autonomous/semi-autonomous vehicle development project in the scope of my PhD thesis and throughly been a part of every engineering solution of this vehicle. I am also the coordinator of the research team comprising of 4 MSc students and 2 undergraduate students. I have particularly focused on the areas below:
    - Selection and placement of the sensors, additional motors and components.
    - Design and implementation of additional signal conditioning electric circuits.
    - Development of vehicle interface software and hardware.
    - Vehicle modeling.
    - Design and implementation of path planning and real-time obstacle avoidance algorithms.
    - Design and implementation of low level controllers such as vehicle speed control, steering wheel control.
      http://www.youtube.com/watch?v=TohW9xokbaM&feature=player_embedded
      http://www.youtube.com/watch?v=JtGAjI10T-o

2008 – 2009 : Research Engineer - Tubitak (Turkish Scientific Technical Research Organization) MAM(Marmara Research Center)- Energy Institute

- Hybrid Electric Mid-Sized Bus Development Project (In Tubitak MAM): In this project, a series hybrid electric vehicle was designed and developed from "Otokar-Sultan"mid-sized bus base vehicle. I have worked on areas given below:
    - Modeling the vehicle with Matlab/Simulink.
    - Genset optimization, hybrid algorithm development and analysis.
    - Subsystem integration such as electric motor, battery and auxillary devices.
    - Implementation of algorithm on real vehicle using DS1401.

2005 – 2008 :Research Engineer - MEKAR (Mechatronics Research Center), Istanbul Technical University.

- Light Commerical Hybrid Electric Vehicle Project (In Mekar): In this project, a parallel hybrid electric vehicle was designed and developed from "Ford Transit" base vehicle. I worked on areas given below:
    - Building and comparing mathematical models of different configurations of hybrid electrical vehicles in Simulink with Car-Maker software.
    - Designing and testing of a new equivalent fuel comsumption minimization algorithm, using vehicle model of selected configuration .
    - Implementation of algorithm on real vehicle using DS1401.

- Drive Safe Project (In Mekar): The primary goal of the Drive Safe Project is to enhance transportation safety, reduce the loss of human life, manpower and goods as a result of accidents. The first step of the project is to create an extensive data base for driver habits in order to recognize the problem and its consequences.I worked on areas given below:
    - Equipment of Renault Megane with 3 axes accelerometer, 2D laser scanner, GPS, sonar sensors, brake pressure sensor(strain gauge) .
    - Development of a real time data collecting software using C++, which reads data from sensors above and CAN bus of vehicle.
    - Development of a real time, hardware in the loop vehicle simulator was for drive tests.

- Autonomous Golf Cart Project: In this Project an electrical golf cart was transformed into an autonomous vehicle by making some changes on steering, braking and throttle system of vehicle. Several actuators was added to system for autonomy of vehicle. An automotic parallel parking

algorithm was designed and applied sucessfully. Path generation, path following, and other algorithms are intended to be realised in the future applications on this vehicle.

- Leonardo Project, Solar Hybrid Electric Vehicle Design**:** In this Europian Comission Project , a solar hybrid vehicle has being modified from an electric cart . I worked on modelling of solar hybrid electric vehicle,including solar panels, battery,electric motor and whole base vehicle.

2001 – 2005 : Undergraduate Projects

- Solarcar and Hydrogen Vehicle Project (Undergraduate Student Club Project)**:** We designed and produced solarcars for the competition "formula-g" which has being organised by TUBITAK (The Scientific and Technical Research Council of Turkey) from 2005. As the captain of team, I supervised the whole electric-electronics and telecomunication system of the car. We designed our solarcars MPPT (maximum power point tracker) which gets the maximum power from solarcells. An in car communication protocol was written using RS485 and CAN. Our student-clubs web site is www.gesk.yildiz.edu.tr. Some awards of our 2 solarcars are:

  2005 Best lap record of 2005 among 16 solarcars.
  (http://www.youtube.com/watch?v=W8UZZMWzJnE , vehicle starts in 8th position and takes leadership at the end of the video)
  2006 Semi-final (placed 1st, among 19 cars)
  Final (placed 3rd, among 38 solarcars)
  2007 Semi-final (placed 2nd, among 20 cars)

  We made a hydrogen vehicle for the competition "Hidromobil" which is being organised by TUBITAK for one year. Our award in Hidromobil:

  2007 Semi-final (placed 1st, among 10 cars)
- Ethernet Based Control Circuit Design (Undergraduate Thesis Work**):** My bachelor's degree thesis was about Ethernet based controlling.. Circuit takes commands from the computer which sends circuits IP number correctly on the network and gives critical data back to computer. Critical data can be seen on LCD at the same time. UDP was used in transportation level of TCP/IP protocol. Also a graphical user interface was written for controlling circuit.