Saghir Munir

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School Address:
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OBJECTIVE To seek a research oriented position related to controls, robotics and dynamics.

EDUCATION

Sep 97 - present **Georgia Institute of Technology, Atlanta.**
Ph.D. Candidate, Mechanical Engineering
(Expected graduation date December 2000)
Advisor: Dr. Wayne J. Book
Emphasis: Controls/Robotics/Dynamics
Minor: Mathematics
Thesis topic: Internet-Based Teleoperation.

Sep 96 - Sep 97 **University of California, Irvine.**
M.Sc. Mechanical and Aerospace Engineering
Advisor: Dr. Kenneth D. Mease
Emphasis: Controls, Dynamics and Spacecraft Navigation/Guidance.
Thesis topic: Entry Guidance Law for a Low Lift/Drag Mars Precision Landing (Mars Pathfinder Mission JPL/NASA).

Sep 92 - Jun 96 **University of California, Irvine.**
B.Sc. Mechanical Engineering

EXPERIENCE

Sep 97 - present **Intelligent Machines Dynamics Laboratory,** Georgia Institute Of Technology, Atlanta.

Graduate Research Assistant: Researched in haptic displays and remote teleoperation. Worked on establishing bilateral control between robots over the internet with random transmission delays in the communication network. Controlling techniques included wave variables (scattering theory) combined with an enhanced version of the Smith predictor, time forward observer and Kalman estimation. Dealt with issues (such as data loss and synchronization problems) arising from the use of UPD protocol in implementing control over a network.

Designed and fabricated a high bandwidth piezo-electric brake for passive haptic displays.

Sep 97 - Dec 99 **Georgia Institute Of Technology,** Atlanta.

Graduate Teaching Assistant: Served as teaching assistant for ME3110/ME2110 (an undergraduate creative decision and design course) for 9 terms. Responsibilities included grading, overseeing laboratory work and helping students with weekly class presentations and report writing.

Sep 96 - Sep 97 **Flight Dynamics and Controls Laboratory,** University of California, Irvine.

Graduate Research Assistant: Implemented Space shuttle type drag-based predictive tracking guidance for Mars precision landing (Mars Pathfinder mission). Wrote an extensive computer simulation (in collaboration with the technical staff at JPL/NASA) of an entry module undergoing ballistic entry into Martian atmosphere. Project funded by the Jet Propulsion Laboratory/NASA.

Oct 91 - Oct 96 **Tuttle Click Automotive Group,** Irvine, CA.
Sales and Leasing of Mitsubishi, Chrysler Plymouth, Jeep Eagle and Dodge
(Worked here throughout my undergraduate career for 35-42 hours per week).

Jan 96 - Jun 96 **University of California,** Irvine, CA.
Senior design project: Designed and fabricated a 5 axis robot. Designed circuitry for interfacing robot to a data acquisition control card with 6 A/D channels, 2 D/A channels and 16 digital I/O pins. Wrote control software in Borland turbo C. Project advised by Dr. James E. Bobrow and Dr. Derek Dunn-Rankin.

Sep 95 - Dec 95 **Sensor Medics,** Yorba Linda, CA.
(A project arranged by UC Irvine Mechanical Eng. Dept). Designed a radio interference shield for a breathing ventilator. Designed and built a calibration flask for the same system.

Mar 95 - Jun 96 **Linvatec (Shutt Medical),** San Demas, CA.
(A project arranged by UC Irvine Mechanical Eng. Dept). Performed finite element analysis on a surgical tool used in knee operations.

PUBLICATIONS

- S.Munir, L.Tognetti & W.Book, "Experimental evaluation of a new braking system for use in Passive Haptic Displays", American Controls Conference, 1999.
- K.Y. Tu, M.S.Munir, K.D. Mease & D.S. Bayard, "Drag-Based Predictive Tracking Guidance for Mars Precision Landing", AIAA Journal of Guidance, Vol. 23, No.4, July-August 2000.
- K.Y. Tu, M.S.Munir, K.D. Mease & D.S. Bayard, "Drag-Based Predictive Tracking Guidance for Mars Precision Landing", AIAA Atmospheric Flight Mechanic Conference, August, 1998.
- S.Munir, "World Class Basketball", IBM/PC/XT computer game, The Personal Computer World Magazine, published and distributed by Vasstec Software, London/Glasgow, England, 1990.

COMPUTER

- Proficient in JAVA, C, Pascal and Basic.
- Exposure to C++, Fortran and COBOL.
- Experience with MATLAB & Simulink, HTML and Patran.
- Experience with various I/O hardware such as by National Instuments, d-Space, Quansar Consulting and Computer Boards Inc.
- Experience with various I/O software such as LABVIEW and Win-Con client/server.
- Assembly programming (MOTOROLA HC11 microprocessor).

FELLOWSHIPS AND HONORS

- Recipient of **INTEL fellowship** (Georgia Tech, 2000).
- Recipient of **Holmes fellowship** (UC Irvine, 1996-1997).
- Offered GAANN fellowship at UC Irvine, 1996.
- Offered fellowship at UCLA, 1996.
- Recipient of the Dean's Academic Achievement Award, 1996.
- Graduated **Magna Cum Laude,** 1996.
- **1st place Winner** of the ASME Parker & Hennafin National Design Competition, 1996.
- Dean's List, UC Irvine, 1992-1996.
- Member: Tau Beta Pi Honor Society.

OTHER Experience with machine shop equipment and tools.

PERSONAL Activities: Jogging and gym.
Languages: English (primary)/Punjabi/Urdu and Greek (rusty).
Citizenship: U.S.