





Rahul Goel

Postdoctoral Research Fellow, Radiology

 Curriculum Vitae available Online

 Resume available Online

Bio

BIO

I am an Aerospace engineer by training with a Ph.D. in Kinesiology (Neuroscience, Biomechanics, and Space Life Sciences curricular tracks). My Ph.D. research was in the area of Biomechanics and Motor Control of human movement, particularly about human posture control and locomotion in healthy as well as special populations, such as the elderly, patients, and astronauts. As part of my Ph.D., I worked at NASA Johnson Space Center's Neurosciences lab on various projects related to sensorimotor control issues that astronauts face during and after spaceflight.

Currently, in the Precision Health and Integrated Diagnostics (PHIND) Center in the Dept. of Radiology of the Stanford School of Medicine, I am part of the Pervasive Wellbeing Technology lab, where I am helping with several studies around wellbeing and stress management in the wild carried out in an unobtrusive way using sensors that already exist, like computer mice, touchpad, steering wheel of a car, etc.

In the recent past, in the Dept. of Neuroscience of Baylor College of Medicine (BCM) in Houston, I worked on predicting stress response using fMRI and physiological signals in veterans with PTSD, using machine learning. I also worked at the inter-disciplinary consortium of advanced motion performance (iCAMP) of Dept. of Surgery of BCM, where I helped with data analyses of several clinical studies related to using different types of wearables for supervised or unsupervised monitoring of daily physical activities in different populations (like older adults, patients with sternotomy, etc.).

Research interests:

Neuroscience, biomechanics, vestibular stimulation, balance and locomotion, artificial gravity, motor control, sensory systems, human performance, sports science, wearable devices, digital health

Skills:

Non-invasive stimulation (TMS, GVS), non-invasive brain monitoring (EEG, fMRI), structural-MRI, EMG, Force & Motion sensors (e.g., accelerometers, gyroscope etc.), wearable sensors, MATLAB, C++, Python, signal processing, machine learning, statistical modeling, controls and programming, system identification, human factors, multi-sensory interactions

STANFORD ADVISORS

- Garry Gold, Postdoctoral Faculty Sponsor
- Pablo Paredes Castro, Postdoctoral Research Mentor

Publications

PUBLICATIONS

- **Fronto-Parietal Brain Areas Contribute to the Online Control of Posture during a Continuous Balance Task** *NEUROSCIENCE*
Goel, R., Nakagome, S., Rao, N., Paloski, W. H., Contreras-Vidal, J. L., Parikh, P. J.
2019; 413: 135–53
- **Daily Use of Bilateral Custom-Made Ankle-Foot Orthoses for Fall Prevention in Older Adults: A Randomized Controlled Trial** *JOURNAL OF THE AMERICAN GERIATRICS SOCIETY*
Wang, C., Goel, R., Zhang, Q., Lepow, B., Najafi, B.
2019; 67 (8): 1656–61
- **Effectiveness of Daily Use of Bilateral Custom-Made Ankle-Foot Orthoses on Balance, Fear of Falling, and Physical Activity in Older Adults: A Randomized Controlled Trial** *GERONTOLOGY*
Wang, C., Goel, R., Rahemi, H., Zhang, Q., Lepow, B., Najafi, B.
2019; 65 (3): 299–307
- **Wearable Sensor-based Digital Biomarker to Estimate Chest Expansion during Sit-to-Stand Transitions – A Practical Tool to Improve Sternal Precautions in Patients undergoing Median Sternotomy** *IEEE Transactions on Neural Systems & Rehabilitation Engineering*
Wang, C., Goel, R., Noun, M., Ghanta, R. K., Najafi, B.
2019
- **Calibrating balance perturbation using electrical stimulation of the vestibular system** *JOURNAL OF NEUROSCIENCE METHODS*
Goel, R., Rosenberg, M. J., Cohen, H. S., Bloomberg, J. J., Mulavara, A. P.
2019; 311: 193–99
- **Critical Role of Somatosensation in Postural Control Following Spaceflight: Vestibularly Deficient Astronauts Are Not Able to Maintain Upright Stance During Compromised Somatosensation** *FRONTIERS IN PHYSIOLOGY*
Ozdemir, R. A., Goel, R., Reschke, M. F., Wood, S. J., Paloski, W. H.
2018; 9: 1680
- **Effects of speed and direction of perturbation on electroencephalographic and balance responses** *EXPERIMENTAL BRAIN RESEARCH*
Goel, R., Ozdemir, R. A., Nakagome, S., Contreras-Vidal, J. L., Paloski, W. H., Parikh, P. J.
2018; 236 (7): 2073–83
- **Assessing Somatosensory Utilization during Unipedal Postural Control** *FRONTIERS IN SYSTEMS NEUROSCIENCE*
Goel, R., De Dios, Y. E., Gadd, N. E., Caldwell, E. E., Peters, B. T., Reschke, M. F., Bloomberg, J. J., Oddsson, L. E., Mulavara, A. P.
2017; 11: 21
- **Motor Control Performance During Rapid Voluntary Movements of Elbow and Knee** *JOURNAL OF MOTOR BEHAVIOR*
Goel, R., Paloski, W. H.
2016; 48 (4): 348–56
- **Using low levels of stochastic vestibular stimulation to improve locomotor stability** *FRONTIERS IN SYSTEMS NEUROSCIENCE*
Mulavara, A. P., Kofman, I. S., De Dios, Y. E., Miller, C., Peters, B. T., Goel, R., Galvan-Garza, R., Bloomberg, J. J.
2015; 9: 117
- **Using Low Levels of Stochastic Vestibular Stimulation to Improve Balance Function** *PLOS ONE*
Goel, R., Kofman, I., Jeevarajan, J., De Dios, Y., Cohen, H. S., Bloomberg, J. J., Mulavara, A. P.
2015; 10 (8): e0136335
- **Effects of five days of bed rest with intermittent centrifugation on neurovestibular function.** *Journal of musculoskeletal & neuronal interactions*
Clément, G., Bareille, M. P., Goel, R., Linnarsson, D., Mulder, E., Paloski, W. H., Rittweger, J., Wuyts, F. L., Zange, J.
2015; 15 (1): 60–68

- **Stress wave micro-macro attenuation in ceramic plates made of tiles during ballistic impact** *INTERNATIONAL JOURNAL OF MECHANICAL SCIENCES*
Goel, R., Kulkarni, M. D., Pandya, K. S., Naik, N. K.
2014; 83: 30–37
- **An experimental and numerical study of blast induced shock wave mitigation in sandwich structures** *APPLIED ACOUSTICS*
Schimizze, B., Son, S. F., Goel, R., Vechart, A. P., Young, L.
2013; 74 (1): 1–9
- **Shock attenuation of PMMA sandwich panels filled with soda-lime glass beads: A fluid-structure interaction continuum model simulation** *INTERNATIONAL JOURNAL OF IMPACT ENGINEERING*
Christou, G. A., Young, L. R., Goel, R., Vechart, A. P., Jerusalem, A.
2012; 47: 48–59
- **Modeling the benefits of an artificial gravity countermeasure coupled with exercise and vibration** *ACTA ASTRONAUTICA*
Goel, R., Kaderka, J., Newman, D.
2012; 70: 43–51
- **Design/Development of Mini/Micro Air Vehicles through Modelling and Simulation: Case of an Autonomous Quadrotor** *DEFENCE SCIENCE JOURNAL*
Gupta, N. K., Goel, R., Ananthkrishnan, N.
2011; 61 (4): 337–45
- **Effect of back pressure on impact and compression-after-impact characteristics of composites** *COMPOSITE STRUCTURES*
Kulkarni, M. D., Goel, R., Naik, N. K.
2011; 93 (2): 944–51
- **Evaluating the Performance of Helmet Linings Incorporating Fluid Channels** *Journal of ASTM International*
Stewart, D., Young, L. R., Goel, R., Christou, G., Gilchrist, M. D.
2010; 7 (10)
- **Stress wave attenuation in ceramic plates** *JOURNAL OF APPLIED PHYSICS*
Naik, N. K., Goel, R., Kulkarni, M. D.
2008; 103 (10)