Premananda P Indic, Ph.D.
Assistant Professor Electrical Engineering
The University of Texas at Tyler

Education:

Ph.D.   Nonlinear Signal Processing, Cochin University, India, 2001
M.Tech.   Electrical Engineering, University of Calicut, India, 1996
B.Tech.   Electrical & Electronics Engineering, University of Calicut, 1992

Postdoctoral Training:

Postdoc.   Biomathematical Modeling - Medicine, Harvard University, 2004

Honors and Awards:

- Honors in M.Tech 1996
- Chair, Minisymposium, SIAM/SMB 2006
- NSF Study Section Member 2016
- Program Chair, NSF SCH Workshop 2016

Research Interests:

My research group focuses on developing systems and methods for the prevention of life threatening events. We have been focusing on designing wearable technologies for capturing physiological signals and developing signal processing algorithms using these signals to predict life threatening events. Our focus has been in predicting apnea in premature infants and suicidal ideation in individuals with major depression. My research has been supported by NSF, NIH and Veterans Affairs.

I have been a member of a team of engineers/scientists from Wyss institute-Harvard University and University of Massachusetts Medical school that developed "a smart mattress" to reduce life threatening events in preterm infants . We filed a patent application and the technology is being licensed to a medical device company. In addition, I have developed a signal processing algorithms to detect suicidal ideation using signals obtained from a wearable watch (similar to FitBit).

Premananda P. Indic, Ph.D.

Areas of Research Interest

System for the Prediction of Life Threatening Events in Preterm Infants:

- Designing wearable sensors for monitoring respiration, movement and heart rate
- Developing Predictive Analytics using Big Data approach

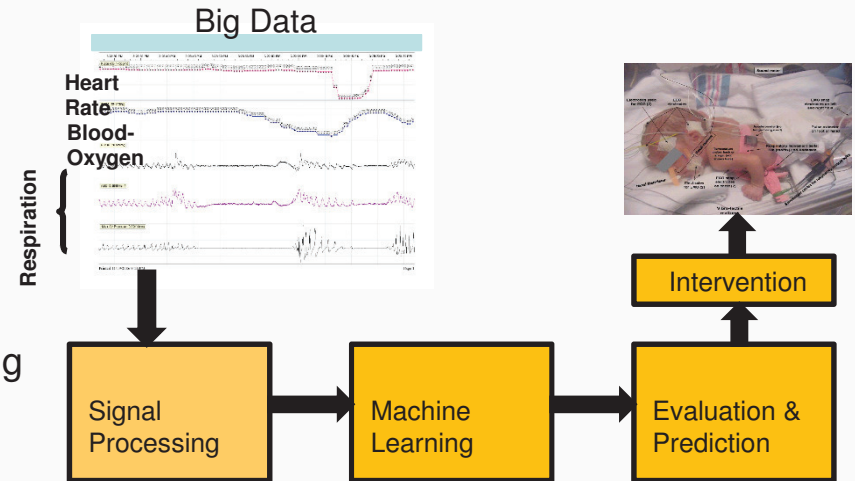**System for the Prediction of Suicidal Ideation in Individuals with Major Depression**

- Designing a wearable sensor system for monitoring activity, temperature and heart rate
- Developing Predictive Analytics

System for the Prediction of Cravings in Individuals with Addiction

- Designing a wearable sensor system for monitoring galvanic skin response, temperature and activity
- Developing Predictive Analytics

Smart System for Preterm Infants

Select Publications:

Gee A, Barbieri R, Paydarfar D, **Indic P.** Predicting bradycardia in premature infants using instantaneous estimation of heart rate from a point process modeling framework. *IEEE Trans. Biomed. Eng.* (under revision)

Carreiro A, Wittbold K, **Indic P**, Fang H, Zhang J, Boyer E, Wearable biosensors to detect physiological changes during opioid use. Journal of Medical Toxicology (in press)

Indic P, Paydarfar D, Barbieri R. A point process model of inter-breath interval: a new approach for the assessment of instability of breathing in neonates. *IEEE Trans Biomed Eng.*, 2013, 60(10), 2858-2866

Indic P, Murray G, Maggini C, Amore M, Meschi T, Borghi L, Baldessarini RJ, Salvatore P. Multi-scale motility amplitude associated with suicidal thoughts in major depression. *PLoS ONE* 2012, 7(6): e38761.

Gee A, Barbieri R, Paydarfar D, **Indic P.** Uncovering statistical features of bradycardia severity in premature infants using a point process model. *IEEE Engineering Medicine Biology Society,* 2015 58555-5858

Indic P, Paydarfar D, Barbieri R. A point process model of respiratory dynamics in early physiological development. *IEEE Engineering Medicine Biology Society,* 2011, 3804-3807

Premananda P. Indic, Ph.D.