Day 1

- Registration (9:00 AM – 9:30 AM)
- Inaugural (9:30 AM – 9:45 AM)
- Tea (9:45 AM – 10:00 AM)
- Lecture by Walt on TBI for this conference (45 + 5 minutes) (10:00 – 11:00)
  - Highlighting white matter tracts.
  - Essential features of the Cortex and subcortical regions.
  - Identifying features in diffusion MRI for tract location.
  - Introduction to software: FREESURFER, FSL.
  - Demo and exercises for cortical area identification.
- Tea 12:00 – 12:15

- Fundamental MRI principles (60 minutes) - Durgesh (12:15-13:15)
  - Lamor Frequency,
  - Resonance,
  - Tissue contrast T1, T2,
  - Image formation k-space
  **LUNCH 13:15 – 14:30**

- Introduction to Diffusion MR Imaging (60 minutes) – Sudhir 14:30 – 16:00
  - Basis of Diffusion MRI
  - Mathematical Modeling of Diffusion Signal
  - Imaging Protocol used for Model.
  - Parametric and non-Parametric models (introduction)
  **TEA BREAK 16:00 – 16:15**

Preprocessing of DMRI /Demos (16:15 – 17:30)

Day 1 Break
Day 2

- **Talk by Walt** on Validation using Phantom and ex-vivo imaging (60 minutes) 10:00 – 11:00

- **Microstructural Imaging (60 minutes) – Sudhir (11:00 – 12:00)**
  - Basis of diffusion process in biological tissue.
  - Mathematical modeling of diffusion signal (parametric)
  - NODDI/SMT/Kurtosis Imaging

- Tea Break: 12:00 – 12:15
- **Sudhir (12:15- 13:15)**
- Imaging Protocol.
- Signal on Sphere, fiber ODF, Deconvolution of the sphere
- Tractometry (if time permits)
- **LUNCH 13:15 – 14:30**

- **Clinical Talks (2 hour) (Walt, Sudhir,) (14:30 – 16:00)**
  - On neurosurgery
  - TBI
  - Neurodegenerative diseases
  - Tea Break (16:00 – 16:15)

- Deep Learning Models(2 hour)
  - **(Aditya, Rathish, Ranjeet) 16:15- 18:15**
    - Deep Learning in medical Imaging
    - Physics-based Neural Network Models
    - Neurodegenerative diseases

- Demo (one hours) **(Sudhir, Durgesh)**

- **SPECIAL DINNER (VH) 7:30 PM.**

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**December 05-07, 2023**

**Organizers : Prof. BV Rathish Kumar, Prof. Walt Schneider, Prof. S.K. Pathak**