Background and Goal

- The existence of ancient palm leaf manuscripts in Southeast Asia is very important both in term of quantity and variety of historical contents.
- An effort to explore Document Image Analysis (DIA) research for palm leaf manuscripts collection as the heritage documents from Southeast Asia.
- A new challenge for DIA researchers because it uses palm leaf as writing media and also with a language and script that have never been analyzed before.

Source of the Collections

- Balinese Palm Leaf Manuscripts – Bali – Indonesia:
  - 23 different collections from 5 different locations
- Khmer Palm Leaf Manuscripts – Cambodia:
  - from Buddhist temples in different locations throughout Cambodia
- Sundanese Palm Leaf Manuscripts – West Java – Indonesia:
  - from Situs Kabuyutan Ciburuy, Garut, West Java

Challenges: Task, Dataset, Track, Protocol, Evaluation

Challenge A. Binarization (1 Track Mixed)

Evaluation [1]:
- F-Measure (FM)
- Peak Signal Noise Ratio (PSNR)
- Negative Rate Metric (NRM)

Challenge B. Text Line Segmentation (1 Track Mixed)

Evaluation [2]:
- One-to-one match score (o2o)
- Detection Rate (DR)
- Recognition Accuracy (RA)
- Performance Metric (FM)

Challenge C. Isolated Character/Glyph Recognition (3 Single Tracks)

Evaluation [1]:
- Recognition Rate

Challenge D. Word Transliteration (3 Tracks and 1 Track Mixed)

Evaluation [3]:
- Character Error Rate (CER)

The Participants and Evaluation Results

- 22 research groups registered, 8 research groups submitted their results: 4 groups for Challenge A, 1 group for Challenge B, 2 groups for Challenge C, and 2 groups for Challenge D.

- A: G17 uses difference of Gaussian and non-linear enhancement
- C: G20 uses a very deep convolutional neural network (100 layers) with dense connection
- D: G13 uses a convolutional neural network encoder and a recurrent neural network decoder equipped with an attention mechanism

The Winners

- Challenge A: Deepak Kumar, from Department of Electronics & Communication Engineering, Dayananda Sagar Academy of Technology and Management (DSATM), Bengaluru, India.
- Challenge B: No winner.
- Challenge C: Zhi-Rui Wang, Jun Du and Wen-Chao Wang, from University of Science and Technology of China, China.
- Challenge D: Jianzhong Zhang, Jun Du, and Lirong Dai, from National Engineering Laboratory for Speech and Language Information Processing, University of Science and Technology of China, China.