

February 14-18, 2016

San Francisco, CA

## Document Recognition and Retrieval (DRR) XXIII

### Introduction

On behalf of the Conference Committee for the Twenty-third Document Recognition and Retrieval 2016 (DRR XXIII), we welcome you to this annual conference which is part of the IS&T Symposium on Electronic Imaging.

DRR is one of three leading international conferences on document imaging, but is unique in highlighting the au courant research in all aspects of document imaging applications – image analysis, object recognition, and information retrieval and text mining.

The conference received 23 original scientific paper submissions, which includes two manuscripts that were also submitted through the combined IS&T's Journal of Information Science and Technology (JIST) + DRR track. 12 papers were accepted, of which one was accepted for co-publication in JIST resulting in an overall acceptance rate of 52%. Nine eligible manuscripts were reviewed for the Best Student Paper Award, whose winner will be announced at the conference award ceremony.

The conference program is organized into 4 thematic tracks: Recognition and Classification; Writer and Language Identification & Handwriting; OCR and Text Recognition; and, Text Analysis.

We want to sincerely thank the Conference Committee members and other referees for helping us be selective and create a strong technical program. We are also grateful to the members of the student paper award committee for carrying out the difficult task of conducting a second review and selecting the winning paper.

We are honored that Dr. Ashok Papat, Research Scientist at Google, Inc., has agreed to present the Keynote lecture. He will speak on the topic of Optical Character Recognition (OCR) at Google: Books and Beyond.

We hope that you all have an excellent experience at DRR XXIII, and look forward to your continued support of the meeting in future.



Photo: Francisco Inai.

**Symposium Chairs:** Choon-Woo Kim, Inha University (Korea, the Republic of), Nitin Sampat, Rochester Institute of Technology (United States)

**Symposium Short Course Chairs:** Majid Rabbani, Eastman Kodak Co. (United States), Mohamed-Chaker Larabi, University of Poitiers (France)

**At-large Conference Chair Representative:** Adnan Alattar, Digimarc (United States)

**Local Liaison Chair:** Joyce Farrell, Stanford University (United States)

**Exhibit and Sponsorship Chair:** Kevin Matherson, Microsoft Corp. (United States)

**Past Symposium Chair:** Sheila Hemami, Northeastern University (United States)

**Conference Chairs:** Sameer Antani, National Library of Medicine (United States), Bart Lamiroy, University de Lorraine (France)

**Conference Committee:** Gady Agam, Illinois Institute of Technology (United States), Elisa Barney Smith, Boise State University (United States), William Barrett, Brigham Young University (United States), Bertrand Coüasnon, Institut National des Sciences Appliquées de Rennes (France), Xiaoqing Ding, Tsinghua University (China), Ergina Kavallieratou, University of the Aegean (Greece), Xiaofan Lin, A9.COM, Inc. (United States), Daniel Lopresti, Lehigh University (United States), Umapada Pal, Indian Statistical Institute (India), Eric Ringger, Brigham Young University (United States), Sargur Srihari, University at Buffalo (United States), Kazem Taghva, University of Nevada, Las Vegas (United States), George Thoma, National Library of Medicine (United States), Christian Viard-Gaudin, Université de Nantes (France), Pingping Xiu, Salesforce.com, Inc. (United States), Richard Zanibbi, Rochester Institute of Technology (United States) Jie Zou, National Library of Medicine (United States)

## Document Recognition and Retrieval (DRR) XXIII

### Wednesday, February 17, 2016

#### Recognition and Classification

11:00 am – 12:30 pm

Continental Ballroom 2

11:00 DRR-052  
**Training a calligraphy style classifier on a non-representative training set**, George Nagy<sup>1</sup> and Xiafen Zhang<sup>2</sup>; <sup>1</sup>Rensselaer Polytechnic Institute (USA) and <sup>2</sup>Shanghai Maritime University (China)

11:30 DRR-053  
**Human-directed optical music recognition**, Liang Chen and Christopher Raphael, Indiana University Bloomington (USA)

12:00 DRR-054  
**Arrowhead detection in biomedical images**, K.C. Santosh<sup>1</sup>, Naved Alam<sup>2</sup>, Pratim Partha Roy<sup>2</sup>, Sameer Antani<sup>1</sup>, George Thoma<sup>1</sup>, and Laurent Wendling<sup>3</sup>; <sup>1</sup>US National Library of Medicine (USA), <sup>2</sup>IIT Roorkee (India), and <sup>3</sup>Paris V University (France)

12:30 – 2:00 pm Lunch Break

#### EI 2016 Wednesday Plenary and Symposium Awards

Session Chair: Choon-Woo Kim (Inha University)

2:00 – 3:00 PM

Continental Ballroom 5

**Intel® RealSense Technology: Adding human-like sensing and interactions to computing devices**, Achin Bhowmik, Intel Corporation (USA)

3:00 – 3:30 pm Coffee Break

#### Writer and Language Identification – Handwriting

3:30 – 5:30 pm

Continental Ballroom 2

3:30 DRR-055  
**Simple and fast geometrical descriptors for writer identification**, Angelika Garz<sup>1</sup>, Marcel Würsch<sup>1</sup>, Andreas Fischer<sup>1,2</sup>, and Rolf Ingold<sup>1</sup>; <sup>1</sup>University of Fribourg and <sup>2</sup>University of Applied Sciences and Arts Western Switzerland (Switzerland)

4:00 DRR-056  
**Cuckoos among your data: A quality control method to retrieve mislabeled writer identities from handwriting datasets**, Vlad Atanasiu, University of Fribourg (Switzerland)

12:30 – 2:00 pm Lunch Break

4:30 DRR-057  
**Intelligent pen: A least cost search approach to stroke extraction in historical documents**, Kevin Bauer and William Barrett, Brigham Young University (USA)

5:00 DRR-058  
**Language identification in document images (JIST-first)**, Philippine Barlas, David Hébert, Clément Chatelain, Sébastien Adam, and Thierry Paquet, LITIS (France)

#### EI 2016 Symposium Interactive Papers Session

5:30 – 7:00 PM

Continental Ballroom 6

### Thursday, February 18, 2016

#### DRR Keynote

Session Chairs: Sameer Antani, National Library of Medicine (USA) and Bart Lamiroy, Université de Lorraine (France)

8:40 – 10:20 am

Continental Ballroom 2

DRR Opening Remarks

DRR-059  
**OCR at Google: Books and Beyond**, Yasuhisa Fujii, Dmitriy Genzel, Otavio Good, Patrick Hurst, Yuanpeng Li, Ashok Popat, and Ray Smith, Google Inc. (USA)

10:20 – 11:00 am Coffee Break

#### OCR and Text Recognition

11:00 am – 12:30 pm

Continental Ballroom 2

11:00 DRR-060  
**Improving a deep convolutional neural network architecture for character recognition**, Bogdan-Ionut Cirstea and Laurence Likforman, Telecom ParisTech / Institut Mines-Telecom (France)

11:30 DRR-061  
**Integrating text recognition for overlapping text detection in maps**, Narges Honarvar Nazari, Tianxiang Tan, and Yao-Yi Chiang, University of Southern California (USA)

12:00 DRR-062  
**Automatic transcription of historical newsprint by leveraging the Kaldi speech recognition toolkit**, Patrick Schone, Alan Cannaday, Seth Stewart, Rachael Day, and Jeremy Schone, Family Search (USA)

12:30 – 2:00 pm Lunch Break

#### DRR Panel Discussion

Panel Moderators: Sameer Antani, National Library of Medicine (USA) and Bart Lamiroy, Université de Lorraine (France)

2:00 – 3:00 pm

Continental Ballroom 2

3:00 – 3:30 pm Coffee Break

---

**Text Analysis**

---

**3:30 – 5:00 pm**

Continental Ballroom 2

3:30 DRR-063

**Recognizing predatory chat documents using semi-supervised anomaly detection**, Mohammadreza Ebrahimi, Ching Suen, Olga Ormandjieva, and Adam Krzyzak, Concordia University (Canada)

4:00 DRR-064

**Information extraction from resume documents in PDF format**, Jiaze Chen, Liangcai Gao, and Zhi Tang, Peking University (China)

4:30 DRR-065

**Revisiting known-item retrieval in degraded document collections**, Jason Soo and Ophir Frieder, Georgetown University (USA)