

IJCNLP 2017

**The Eighth International Joint Conference
on Natural Language Processing**

Proceedings of the IJCNLP 2017, Shared Tasks

November 27 – December 1, 2017
Taipei, Taiwan

©2017 Asian Federation of Natural Language Processing

978-1-948087-03-2 (Proceedings of the IJCNLP 2017, Shared Tasks)

Introduction

The 8th International Joint Conference on Natural Language Processing (IJCNLP 2017) took place in Taipei, Taiwan from November 27 to December 1, 2017. It was organized by the National Taiwan Normal University and by the Association for Computational Linguistics and Chinese Language Processing (ACLCLP), and it was hosted by the Asian Federation of Natural Language Processing (AFNLP).

For a first time in the history of IJCNLP, the conference featured shared tasks. We received a total of ten task proposals, and after a rigorous review, we accepted the following five of them:

- **Task 1: Chinese Grammatical Error Diagnosis.** Participants were asked to build systems to automatically detect the errors in Chinese sentences made by Chinese-as-Second-Language learners, i.e., redundant word, missing word, word selection and word ordering. (*Organized by: Gaoqi Rao, Baolin Zhang, and Endong Xun*)
- **Task 2: Dimensional Sentiment Analysis for Chinese Phrases.** Given a word or a phrase, participants were asked to generate a real-valued score between 1 and 9, indicating the degree of valence, from most negative to most positive, and for the degree of arousal, from most calm to most excited. (*Organized by Liang-Chih Yu, Lung-Hao Lee, Jin Wang, and Kam-Fai Wong*)
- **Task 3: Review Opinion Diversification.** Participants were asked to build systems to rank product reviews based on a summary of opinions in two domains: books and electronics. (*Organized by Anil Kumar Singh, Julian McAuley, Avijit Thawani, Mayank Panchal, Anubhav Gupta, and Rajesh Kumar Mundotiya*)
- **Task 4: Customer Feedback Analysis.** Participants were asked to train classifiers for the detection of meaning in customer feedback in English, French, Spanish, and Japanese: comment, request, bug, complaint, meaningless, and undetermined. (*Organized by Chao-Hong Liu, Yasufumi Moriya, Alberto Poncelas, and Declan Groves*)
- **Task 5: Multi-choice Question Answering in Examinations.** Participants were asked to build systems to choose the correct option for a multi-choice question: for English and Chinese. (*Organized by Jun Zhao, Kang Liu, Shizhu He, Zhuoyu Wei, and Shangmin Guo*)

A total of 40 teams participated in the five tasks (and many more registered to participate, but ended up not submitting systems), submitting hundreds of runs for the different tasks and their subtasks: 5 for task 1, 13 for task 2, 3 for task 3, 12 for task 4, and 7 for task 5. Moreover, most of the participating teams contributed a system description paper: 3 for task 1, 10 for task 2, 3 for task 3, 9 for task 4, and 6 for task 5. Finally, the organizers of each task prepared a task description paper. All these appear in the present proceedings.

We thank the shared task participants, as well as the task organizers, for all their great work. We further take the opportunity to thank the program committee and all reviewers for their thorough reviews.

The IJCNLP'2017 Shared Task Co-Chairs:

Chao-Hong Liu, ADAPT Centre, Dublin City University, Ireland
Preslav Nakov, Qatar Computing Research Institute, HBKU, Qatar
Nianwen Xue, Brandeis University, USA

Organizing Committee

Shared Task Workshop Co-Chairs

Chao-Hong Liu, ADAPT Centre, Dublin City University
Preslav Nakov, Qatar Computing Research Institute, HBKU
Nianwen Xue, Brandeis University

Task 1: Chinese Grammatical Error Diagnosis (CGED) Organizers

Gaoqi Rao, Beijing Language and Culture University
Baolin Zhang, Beijing Language and Culture University
Endong Xun, Beijing Language and Culture University

Task 2: Dimensional Sentiment Analysis for Chinese Phrases (DSAP) Organizers

Liang-Chih Yu, Yuan Ze University
Lung-Hao Lee, National Taiwan Normal University
Jin Wang, Yunnan University
Kam-Fai Wong, The Chinese University of Hong Kong

Task 3: Review Opinion Diversification Organizers

Anil Kumar Singh, Indian Institute of Technology (BHU) Varanasi
Julian McAuley, University of California, San Diego
Avijit Thawani, Indian Institute of Technology (BHU) Varanasi
Mayank Panchal, Indian Institute of Technology (BHU) Varanasi
Anubhav Gupta, Indian Institute of Technology (BHU) Varanasi
Rajesh Kumar Mundotiya, Indian Institute of Technology (BHU)

Task 4: Customer Feedback Analysis Organizers

Chao-Hong Liu, ADAPT Centre, Dublin City University
Yasufumi Moriya, ADAPT Centre, Dublin City University
Alberto Poncelas, ADAPT Centre, Dublin City University
Declan Groves, Microsoft Dublin

Task 5: Multi-choice Question Answering in Examinations Organizers

Jun Zhao, Institute of Automation, Chinese Academy of Sciences
Kang Liu, Institute of Automation, Chinese Academy of Sciences
Shizhu He, Institute of Automation, Chinese Academy of Sciences
Zhuoyu Wei, Institute of Automation, Chinese Academy of Sciences
Shangmin Guo, Institute of Automation, Chinese Academy of Sciences

Program Committee

Reviewers

Alberto Poncelas, ADAPT Centre, Dublin City University
Anil Kumar Singh, Indian Institute of Technology (BHU) Varanasi
Anubhav Gupta, Indian Institute of Technology (BHU) Varanasi
Avijit Thawani, Indian Institute of Technology (BHU) Varanasi
Baolin Zhang, Beijing Language and Culture University
Chao-Hong Liu, ADAPT Centre, Dublin City University
Endong Xun, Beijing Language and Culture University
Gaoqi Rao, Beijing Language and Culture University
Haithem Afli, ADAPT Centre, Dublin City University
Jin Wang, Yunnan University
Julian McAuley, University of California, San Diego
Jun Zhao, Institute of Automation, Chinese Academy of Sciences
Kam-Fai Wong, The Chinese University of Hong Kong
Kang Liu, Institute of Automation, Chinese Academy of Sciences
Liang-Chih Yu, Yuan Ze University
Lung-Hao Lee, National Taiwan Normal University
Mayank Panchal, Indian Institute of Technology (BHU) Varanasi
Monalisa Dey, Jadavpur University
Nianwen Xue, Brandeis University
Preslav Nakov, Qatar Computing Research Institute, HBKU
Pruthwik Mishra, International Institute of Information Technology, Hyderabad
Rajesh Kumar Mundotiya, Indian Institute of Technology (BHU) Varanasi
Shangmin Guo, Institute of Automation, Chinese Academy of Sciences
Shih-Hung Wu, Chaoyang University of Technology
Yasufumi Moriya, ADAPT Centre, Dublin City University

Invited Talk

Public Health Surveillance Using Twitter: The Case for Biosurveillance and Pharmacovigilance

Antonio Jimeno Yepes

IBM Research, Australia

Abstract

Public health surveillance using clinical data is challenging due to issues related to accessing health care data in a homogeneous way and in real-time, which is further affected by privacy concerns. Yet, it is still relevant to access this data in real-time to model potential disease outbreaks and to detect post-marketing adverse events of drugs. Social networks such as Twitter provide a large quantity of information that can be relevant as an alternative to clinical data. We have researched the usage of Twitter in several tasks related to public health surveillance. In this talk, I will present the work that we have done in IBM Research Australia using Twitter in public health related problems and the challenges that we have faced using Twitter. Specifically, I will show results related to the prediction of the prevalence of flu in the USA and related to the identification of post-marketing adverse events of drugs.

Biography

Dr Antonio Jimeno Yepes is a senior researcher in text analytics in the Biomedical Data Science team at IBM Research Australia. Before joining IBM, he worked as software engineer at CERN from 2000 to 2006, then as software engineer at the European Bioinformatics Institute (EBI) from 2006 to 2010, as a post-doctoral researcher at the USA National Library of Medicine (NIH/NLM) from 2010 to 2012, as a researcher at National ICT Australia from 2012 to 2014 and as researcher at the CIS department at the University of Melbourne in 2014. He obtained his Masters degree in Computer Science in 2001, a master in Intelligent systems in 2008 and his PhD degree related to biomedical natural languages and ontologies in 2009 from University Jaume I.

Table of Contents

<i>IJCNLP-2017 Task 1: Chinese Grammatical Error Diagnosis</i>	
Gaoqi RAO, Baolin Zhang, Endong XUN and Lung-Hao Lee	1
<i>IJCNLP-2017 Task 2: Dimensional Sentiment Analysis for Chinese Phrases</i>	
Liang-Chih Yu, Lung-Hao Lee, Jin Wang and Kam-Fai Wong	9
<i>IJCNLP-2017 Task 3: Review Opinion Diversification (RevOpiD-2017)</i>	
Anil Kumar Singh, Avijit Thawani, Mayank Panchal, Anubhav Gupta and Julian McAuley	17
<i>IJCNLP-2017 Task 4: Customer Feedback Analysis</i>	
Chao-Hong Liu, Yasufumi Moriya, Alberto Poncelas and Declan Groves	26
<i>IJCNLP-2017 Task 5: Multi-choice Question Answering in Examinations</i>	
Shangmin Guo, Kang Liu, Shizhu He, Cao Liu, Jun Zhao and Zhuoyu Wei	34
<i>Alibaba at IJCNLP-2017 Task 1: Embedding Grammatical Features into LSTMs for Chinese Grammatical Error Diagnosis Task</i>	
Yi yang, Pengjun Xie, Jun tao, Guangwei xu, Linlin li and Si lu	41
<i>THU_NGN at IJCNLP-2017 Task 2: Dimensional Sentiment Analysis for Chinese Phrases with Deep LSTM</i>	
Chuhan Wu, Fangzhao Wu, Yongfeng Huang, Sixing Wu and Zhigang Yuan	47
<i>IIT-H at IJCNLP-2017 Task 3: A Bidirectional-LSTM Approach for Review Opinion Diversification</i>	
Pruthwik Mishra, Prathyusha Danda, Silpa Kanneganti and Soujanya Lanka	53
<i>Bingo at IJCNLP-2017 Task 4: Augmenting Data using Machine Translation for Cross-linguistic Customer Feedback Classification</i>	
Heba Elfardy, Manisha Srivastava, Wei Xiao, Jared Kramer and Tarun Agarwal	59
<i>ADAPT Centre Cone Team at IJCNLP-2017 Task 5: A Similarity-Based Logistic Regression Approach to Multi-choice Question Answering in an Examinations Shared Task</i>	
Daria Dzendzik, Alberto Poncelas, Carl Vogel and Qun Liu	67
<i>YNU-HPCC at IJCNLP-2017 Task 1: Chinese Grammatical Error Diagnosis Using a Bi-directional LSTM-CRF Model</i>	
Quanlei Liao, Jin Wang, Jinnan Yang and Xuejie Zhang	73
<i>CVTE at IJCNLP-2017 Task 1: Character Checking System for Chinese Grammatical Error Diagnosis Task</i>	
Xian Li, Peng Wang, Suixue Wang, Guanyu Jiang and Tianyuan You	78
<i>LDCCNLP at IJCNLP-2017 Task 2: Dimensional Sentiment Analysis for Chinese Phrases Using Machine Learning</i>	
Peng Zhong and Jingbin Wang	84
<i>CKIP at IJCNLP-2017 Task 2: Neural Valence-Arousal Prediction for Phrases</i>	
Peng-Hsuan Li, Wei-Yun Ma and Hsin-Yang Wang	89
<i>CIAL at IJCNLP-2017 Task 2: An Ensemble Valence-Arousal Analysis System for Chinese Words and Phrases</i>	
Zheng-Wen Lin, Yung-Chun Chang, Chen-Ann Wang, Yu-Lun Hsieh and Wen-Lian Hsu	95

<i>Alibaba at IJCNLP-2017 Task 2: A Boosted Deep System for Dimensional Sentiment Analysis of Chinese Phrases</i>	
Xin Zhou, Jian Wang, Xu Xie, Changlong Sun and Luo Si	100
<i>NLPSA at IJCNLP-2017 Task 2: Imagine Scenario: Leveraging Supportive Images for Dimensional Sentiment Analysis</i>	
szu-min chen, Zi-Yuan Chen and Lun-Wei Ku	105
<i>NCYU at IJCNLP-2017 Task 2: Dimensional Sentiment Analysis for Chinese Phrases using Vector Representations</i>	
Jui-Feng Yeh, Jian-Cheng Tsai, Bo-Wei Wu and Tai-You Kuang	112
<i>MainiwayAI at IJCNLP-2017 Task 2: Ensembles of Deep Architectures for Valence-Arousal Prediction</i>	
Yassine Benajiba, Jin Sun, Yong Zhang, Zhiliang Weng and Or Biran	118
<i>NCTU-NTUT at IJCNLP-2017 Task 2: Deep Phrase Embedding using bi-LSTMs for Valence-Arousal Ratings Prediction of Chinese Phrases</i>	
Yen-Hsuan Lee, Han-Yun Yeh, Yih-Ru Wang and Yuan-Fu Liao	124
<i>NTOUA at IJCNLP-2017 Task 2: Predicting Sentiment Scores of Chinese Words and Phrases</i>	
Chuan-Jie Lin and Hao-Tsung Chang	130
<i>CYUT at IJCNLP-2017 Task 3: System Report for Review Opinion Diversification</i>	
Shih-Hung Wu, Su-Yu Chang and Liang-Pu Chen	134
<i>JUNLP at IJCNLP-2017 Task 3: A Rank Prediction Model for Review Opinion Diversification</i>	
Monalisa Dey, Anupam Mondal and Dipankar Das	138
<i>All-In-1 at IJCNLP-2017 Task 4: Short Text Classification with One Model for All Languages</i>	
Barbara Plank	143
<i>SentiNLP at IJCNLP-2017 Task 4: Customer Feedback Analysis Using a Bi-LSTM-CNN Model</i>	
Shuying Lin, Huosheng Xie, Liang-Chih Yu and K. Robert Lai	149
<i>IIT-H at IJCNLP-2017 Task 4: Customer Feedback Analysis using Machine Learning and Neural Network Approaches</i>	
Prathyusha Danda, Pruthwik Mishra, Silpa Kanneganti and Soujanya Lanka	155
<i>ADAPT at IJCNLP-2017 Task 4: A Multinomial Naive Bayes Classification Approach for Customer Feedback Analysis task</i>	
Pintu Lohar, Koel Dutta Chowdhury, Haithem Afli, Mohammed Hasanuzzaman and Andy Way	161
<i>OhioState at IJCNLP-2017 Task 4: Exploring Neural Architectures for Multilingual Customer Feedback Analysis</i>	
Dushyanta Dhyani	170
<i>YNU-HPCC at IJCNLP-2017 Task 4: Attention-based Bi-directional GRU Model for Customer Feedback Analysis Task of English</i>	
Nan Wang, Jin Wang and Xuejie Zhang	174
<i>NITMZ-JU at IJCNLP-2017 Task 4: Customer Feedback Analysis</i>	
Somnath Banerjee, Partha Pakray, Riyanka Manna, Dipankar Das and Alexander Gelbukh	180
<i>IITP at IJCNLP-2017 Task 4: Auto Analysis of Customer Feedback using CNN and GRU Network</i>	
Deepak Gupta, Pabitra Lenka, Harsimran Bedi, Asif Ekbal and Pushpak Bhattacharyya	184

<i>YNUDLG at IJCNLP-2017 Task 5: A CNN-LSTM Model with Attention for Multi-choice Question Answering in Examinations</i>	
Min Wang, Qingxun Liu, Peng Ding, Yongbin Li and Xiaobing Zhou	194
<i>ALS at IJCNLP-2017 Task 5: Answer Localization System for Multi-Choice Question Answering in Exams</i>	
Changliang Li and Cunliang Kong.....	199
<i>MappSent at IJCNLP-2017 Task 5: A Textual Similarity Approach Applied to Multi-choice Question Answering in Examinations</i>	
Amir Hazem	203
<i>YNU-HPCC at IJCNLP-2017 Task 5: Multi-choice Question Answering in Exams Using an Attention-based LSTM Model</i>	
Hang Yuan, You Zhang, Jin Wang and Xuejie Zhang	208
<i>JU NITM at IJCNLP-2017 Task 5: A Classification Approach for Answer Selection in Multi-choice Question Answering System</i>	
Sandip Sarkar, Dipankar Das and Partha Pakray	213

Shared Tasks Program

Friday, December 1, 2017, Room 503

08:00–09:00 *Registration*

09:10–09:30 *Opening Remarks*

09:30–10:30 *Keynote Talk by Antonio Jimeno Yepes on “Public Health Surveillance Using Twitter: the Case for Biosurveillance and Pharmacovigilance”*

10:30–11:00 *Coffee Break*

Session 1: Shared Tasks Overview

11:00–11:20 *IJCNLP-2017 Task 1: Chinese Grammatical Error Diagnosis*
Gaoqi RAO, Baolin Zhang, Endong XUN and Lung-Hao Lee

11:20–11:40 *IJCNLP-2017 Task 2: Dimensional Sentiment Analysis for Chinese Phrases*
Liang-Chih Yu, Lung-Hao Lee, Jin Wang and Kam-Fai Wong

11:40–12:00 *IJCNLP-2017 Task 3: Review Opinion Diversification (RevOpID-2017)*
Anil Kumar Singh, Avijit Thawani, Mayank Panchal, Anubhav Gupta and Julian McAuley

12:00–12:20 *IJCNLP-2017 Task 4: Customer Feedback Analysis*
Chao-Hong Liu, Yasufumi Moriya, Alberto Poncelas and Declan Groves

12:20–12:40 *IJCNLP-2017 Task 5: Multi-choice Question Answering in Examinations*
Shangmin Guo, Kang Liu, Shizhu He, Cao Liu, Jun Zhao and Zhuoyu Wei

12:40–13:20 *Lunch*

Friday, December 1, 2017, Room 503 (continued)

Session 2: IJCNLP-2017 Shared Tasks Oral Session

- 13:20–13:40 *Alibaba at IJCNLP-2017 Task 1: Embedding Grammatical Features into LSTMs for Chinese Grammatical Error Diagnosis Task*
Yi yang, Pengjun Xie, Jun tao, Guangwei xu, Linlin li and Si luo
- 13:40–14:00 *THU_NGN at IJCNLP-2017 Task 2: Dimensional Sentiment Analysis for Chinese Phrases with Deep LSTM*
Chuhan Wu, Fangzhao Wu, Yongfeng Huang, Sixing Wu and Zhigang Yuan
- 14:00–14:20 *IIIT-H at IJCNLP-2017 Task 3: A Bidirectional-LSTM Approach for Review Opinion Diversification*
Pruthwik Mishra, Prathyusha Danda, Silpa Kanneganti and Soujanya Lanka
- 14:20–14:40 *Bingo at IJCNLP-2017 Task 4: Augmenting Data using Machine Translation for Cross-linguistic Customer Feedback Classification*
Heba Elfardy, Manisha Srivastava, Wei Xiao, Jared Kramer and Tarun Agarwal
- 14:40–15:00 *ADAPT Centre Cone Team at IJCNLP-2017 Task 5: A Similarity-Based Logistic Regression Approach to Multi-choice Question Answering in an Examinations Shared Task*
Daria Dzendzik, Alberto Poncelas, Carl Vogel and Qun Liu

15:00–15:30 *Coffee Break*

15:30–16:50 *Session 3: IJCNLP-2017 Shared Tasks Poster Session*

- YNU-HPCC at IJCNLP-2017 Task 1: Chinese Grammatical Error Diagnosis Using a Bi-directional LSTM-CRF Model*
Quanlei Liao, Jin Wang, Jinnan Yang and Xuejie Zhang
- CVTE at IJCNLP-2017 Task 1: Character Checking System for Chinese Grammatical Error Diagnosis Task*
Xian Li, Peng Wang, Suixue Wang, Guanyu Jiang and Tianyuan You
- LDCCNLP at IJCNLP-2017 Task 2: Dimensional Sentiment Analysis for Chinese Phrases Using Machine Learning*
Peng Zhong and Jingbin Wang
- CKIP at IJCNLP-2017 Task 2: Neural Valence-Arousal Prediction for Phrases*
Peng-Hsuan Li, Wei-Yun Ma and Hsin-Yang Wang

Friday, December 1, 2017, Room 503 (continued)

CIAL at IJCNLP-2017 Task 2: An Ensemble Valence-Arousal Analysis System for Chinese Words and Phrases

Zheng-Wen Lin, Yung-Chun Chang, Chen-Ann Wang, Yu-Lun Hsieh and Wen-Lian Hsu

Alibaba at IJCNLP-2017 Task 2: A Boosted Deep System for Dimensional Sentiment Analysis of Chinese Phrases

Xin Zhou, Jian Wang, Xu Xie, Changlong Sun and Luo Si

NLP5A at IJCNLP-2017 Task 2: Imagine Scenario: Leveraging Supportive Images for Dimensional Sentiment Analysis

szu-min chen, Zi-Yuan Chen and Lun-Wei Ku

NCYU at IJCNLP-2017 Task 2: Dimensional Sentiment Analysis for Chinese Phrases using Vector Representations

Jui-Feng Yeh, Jian-Cheng Tsai, Bo-Wei Wu and Tai-You Kuang

MainiwayAI at IJCNLP-2017 Task 2: Ensembles of Deep Architectures for Valence-Arousal Prediction

Yassine Benajiba, Jin Sun, Yong Zhang, Zhiliang Weng and Or Biran

NCTU-NTUT at IJCNLP-2017 Task 2: Deep Phrase Embedding using bi-LSTMs for Valence-Arousal Ratings Prediction of Chinese Phrases

Yen-Hsuan Lee, Han-Yun Yeh, Yih-Ru Wang and Yuan-Fu Liao

NTOUA at IJCNLP-2017 Task 2: Predicting Sentiment Scores of Chinese Words and Phrases

Chuan-Jie Lin and Hao-Tsung Chang

CYUT at IJCNLP-2017 Task 3: System Report for Review Opinion Diversification

Shih-Hung Wu, Su-Yu Chang and Liang-Pu Chen

JUNLP at IJCNLP-2017 Task 3: A Rank Prediction Model for Review Opinion Diversification

Monalisa Dey, Anupam Mondal and Dipankar Das

All-In-1 at IJCNLP-2017 Task 4: Short Text Classification with One Model for All Languages

Barbara Plank

SentiNLP at IJCNLP-2017 Task 4: Customer Feedback Analysis Using a Bi-LSTM-CNN Model

Shuying Lin, Huosheng Xie, Liang-Chih Yu and K. Robert Lai

IIT-H at IJCNLP-2017 Task 4: Customer Feedback Analysis using Machine Learning and Neural Network Approaches

Prathyusha Danda, Pruthwik Mishra, Silpa Kanneganti and Soujanya Lanka

Friday, December 1, 2017, Room 503 (continued)

ADAPT at IJCNLP-2017 Task 4: A Multinomial Naive Bayes Classification Approach for Customer Feedback Analysis task

Pintu Lohar, Koel Dutta Chowdhury, Haithem Afi, Mohammed Hasanuzzaman and Andy Way

OhioState at IJCNLP-2017 Task 4: Exploring Neural Architectures for Multilingual Customer Feedback Analysis

Dushyanta Dhyani

YNU-HPCC at IJCNLP-2017 Task 4: Attention-based Bi-directional GRU Model for Customer Feedback Analysis Task of English

Nan Wang, Jin Wang and Xuejie Zhang

NITMZ-JU at IJCNLP-2017 Task 4: Customer Feedback Analysis

Somnath Banerjee, Partha Pakray, Riyanka Manna, Dipankar Das and Alexander Gelbukh

IITP at IJCNLP-2017 Task 4: Auto Analysis of Customer Feedback using CNN and GRU Network

Deepak Gupta, Pabitra Lenka, Harsimran Bedi, Asif Ekbal and Pushpak Bhat-tacharyya

YNUDLG at IJCNLP-2017 Task 5: A CNN-LSTM Model with Attention for Multi-choice Question Answering in Examinations

Min Wang, Qingxun Liu, Peng Ding, Yongbin Li and Xiaobing Zhou

ALS at IJCNLP-2017 Task 5: Answer Localization System for Multi-Choice Question Answering in Exams

Changliang Li and Cunliang Kong

MappSent at IJCNLP-2017 Task 5: A Textual Similarity Approach Applied to Multi-choice Question Answering in Examinations

Amir Hazem

YNU-HPCC at IJCNLP-2017 Task 5: Multi-choice Question Answering in Exams Using an Attention-based LSTM Model

Hang Yuan, You Zhang, Jin Wang and Xuejie Zhang

JU NITM at IJCNLP-2017 Task 5: A Classification Approach for Answer Selection in Multi-choice Question Answering System

Sandip Sarkar, Dipankar Das and Partha Pakray

16:50–17:00 Closing Session