2019 Programme Booklet

Kenyatta University
Nairobi 25-30 August 2019

Strengthening African
Machine Learning

DeepLearningIndaba.com

DEEP
LEARNING
INDABA

#SautiYetu: Raising Our Voice in AI

With each year, our self-confidence and self-ownership in the ongoing advances and impact of data science, machine learning and artificial intelligence (AI) becomes stronger--here in Kenya, in east Africa, and across our continent. Self-ownership is why we organise, why we build an interconnected African community, and is what it means to Strengthen African Machine Learning. And so we meet together for the 3rd Indaba, proudly here in Nairobi, in Kenya.

Our continent has faced many difficulties over the last year and with many political and humanitarian challenges, like the crises in Sudan and Ethiopia and Algeria, or the fierce debate over the rights of LGBT African citizens in Kenya and Botswana. And all this is happening while we are also struggling with the challenges of jobs for young people, and mitigating the risks of climate change. Machine learning and artificial intelligence can play a role in addressing these problems. Our task is to be the people that help say when and how this might be possible. We must learn to be critical, and to be able to see how the work we do can be used to responsibly address our continent's and our world's challenges.

We are up to the challenge. In the last year we saw local leaders in AI rise up, organising IndabaX days in 27 different countries. We saw the past winners of the Kambule and Maathai awards go on to have greater impact and spread their work wider. We saw our friends and partner groups, like Data Science Africa, Data Science Nigeria, AI Saturdays, WiMLDS and AIMS, all go on to build stronger communities and deeper expertise. At the last Indaba our action was for Masakhane--We Build Together. Masakhane is what we have done: the responsibility for uplifting our communities is as strong as it has ever been.

This year we say **Sauti Yetu--Our Voice**. Our voice can be strong; our voice can create change; we have many different voices that must be heard. Use the Indaba as part of your voice. As we get older, some people attending the Indaba for the 3rd time, we must move to do more. As the Indaba gets closer, we ask that all of us together raise our voice, to be more confident, to take more ownership, and to build the technology that will help us responsibly build the next age of pan-African unity and prosperity.
Our Voice for AI. Our Voice for Africa. Sauti Yetu kwa AI ya Afrika.

Daily Schedule

www.deeplearningindaba.com/schedule-2019

Sunday, 25 August
Registration and Foundations

11 am - 3 pm Registration
12:30 - 2 pm
Parallel: Maths for ML Refresher - Room: EBR 30
Parallel: Python Refresher Course - Room: EBR 100

2 - 4 pm
Parallel: Intro to ML with Tensorflow
Labs: SCC 008 & SCC 003
Parallel: Build your own Tensorflow
Labs: SCC 108 & SCC 103
Parallel: Hackathon Track
Labs: SCC 203 & SCC 209

Sunday, 25 August
Registration and Foundations

4 - 4:30 pm Break

4:30 - 6:30 pm
Parallel: Deep Learning Fundamentals
Room EBR 30
Parallel: Bayesian Inference Fundamentals
EBR 100
Parallel: Optimisation for DL
Room EBR 432

7 pm -11 pm Opening Event

Monday, 26 August
Strengthening Foundations

7:30 - 8:30 am Late Registration
8:30 - 9 am Opening with Kathleen Siminyu, Ulrich Paquet. Welcome from Vice Chancellor of KU, Prof. P. Wainaina. SCZ 39

9 - 10:30 am Keynote: Aisha Walcott-Bryant. SCZ 39

11 am - 1 pm
Parallel Practical: Deep Feedforward Networks.
Labs SCC 003 & SCC 008
Parallel Practical: Optimisation for DL.
Labs SCC 108 & SCC 103
Parallel Practical: Hackathon Track.
Labs SCC 203 & SCC 209

1 - 2:30pm Lunch

2:30 - 4 pm Keynote: Abdoulaye Banire Diallo. Leveraging AI to Accelerate Discovery in Life Science and Deliver Precision. SCZ 39

4:30 - 6:30 pm
Parallel : Convolutional Models. SCZ 39
Parallel : Generative Models. EBR 30
Parallel : AI in Kenya. EBR 100
Parallel : Data Science. EBR 432

7 - 10 pm Mentoring: Women in Machine Learning Evening (signup necessary). KUCC

Tuesday, 27 August
Going Deeper

8:30 - 9:00 am Prizes: Kambule Awards Ceremony. SCZ 39

9:00 - 10:30 am Keynote: Ruha Benjamin. Beyond Buzzwords: Innovation, Imagination, and Inequity in the 21st Century. SCZ 39

10:30 - 11:30 am Break

11 am - 1 pm
Parallel Practical: Convolutional Networks. Labs SCC 003 & SCC 008
Parallel Practical: Generative Models.
Labs SCC 108 & SCC 103
Parallel Practical: Hackathon Track.
Labs SCC 203 & SCC 209

1 - 2:30 pm Lunch

2:30 - 4 pm
Parallel: Recurrent Neural Networks. SCZ 39
Parallel: Attention and Memory Architectures.
EBR 100
Parallel: Bayesian Optimisation and Hyperparameter Search. EBR 30
Parallel: Reinforcement Learning Fundamentals
EBR 432

4:00 - 4:30 pm Break

4:30 - 6:30 pm
Parallel Practical: Recurrent Networks.
Labs SCC 008 & SCC 003
Parallel Practical: Reinforcement Learning.
Labs SCC 108 & SCC 103
Parallel Practical: Hackathon Track.
Labs SCC 203 & SCC 209

7:00 - 8:00 pm Mentoring: (Optional) Interactive Research Sessions. No signup. SCZ 39

Wednesday, 28 August
Research Symposium Day

8:30 - 9:30 am Keynote: Ciira wa Maina. Seeking Research Impact at the Grassroots - The Role of AI. SCZ 39

Wednesday, 28 August
Research Symposium Day

9:30 - 10:30 am Student Talks: 11 Spotlight talks from IndabaX winners. SCZ 39

10:30 - 11 am Break

11:00 - 11:30 am Keynote: Maina Elizaphan Muuro. Enhancing learning using Artificial Intelligence Techniques. SCZ 39

11:30 - 12:45 pm Student Talks: 11 Spotlight talks from IndabaX winners. SCZ 39

12:45 - 1 pm Group photo time.

1 - 2:30 pm Lunch

12 - 1:30 pm Poster Session1 EBR. Allocations on the website

4 - 4:30 pm Break

12 - 1:30 pm Poster Session 2 EBR. Allocations on the website

7:30 - 8:30 pm SCZ 39 **Mentoring:** (Optional) Video Hangout with Andrew Ng. No signup.

7 - 9 pm KUCC **Mentoring:** (Optional) Mentoring with Apple. Signup required.

Thursday, 29 August
Parallel Tracks

8:30 - 10:00 am Keynote: Richard Socher. The Future of Multitask Learning. SCZ 39

10:00 - 10:30 am Prizes: Maathai Impact Award Ceremony.IDRC Grants. SCZ 39

10:30 - 11:30 am Break

11 am - 1 pm
Parallel: Natural Language Processing. EBR 30
Parallel: Computer Vision I. EBR 100

Thursday, 29 August
Parallel Tracks

Parallel: Startups & Innovation I. SCZ 39
Parallel: ML in Production EBR 432

1 - 2:30 pm Lunch

2:30 - 4 pm
Parallel: Machine Learning Ecology. SCZ 39
Parallel: Interactive Research Session II. EBR 432
Parallel: Datasets for African AI. EBR 100

4 - 4:30 pm Break

4:30 - 6:30 pm
Parallel: Speech and Language Processing. EBR 30
Parallel: Vision II. EBR 100
Parallel: Robotics EBR 432
Parallel: Machine Learning for Healthcare. SCZ 39

7:30 - 8:30 pm
Mentoring: (Optional) Video Hangout with Fei-Fei Li. No signup needed. SCZ 39.

Friday, 30 August
Closing

8:30 - 10:30 am
Parallel: Deep RL and Frontiers I. EBR 100
Parallel: ML at the edge. EBR 30
Parallel: AI and Fairness I. SCZ 39
Parallel: French-speakers in AI Unconference. EBR 432

10:30 - 11:00 am Break

11:00 am - 1 pm
Parallel: Deep RL and Frontiers II. EBR 100
Parallel: Makers Session. EBR 432
Parallel: Startups & Innovation II. EBR 30
Parallel: AI and Fairness II. SCZ 39

1 - 2:30 pm Lunch

2:30 - 4 pm Keynote: Finale Doshi-Velez. Reinforcement Learning for Optimizing Health-care Decisions. SCZ 39

Friday, 30 August
Closing

4 - 4:30 pm Break

4:30 - 6 pm Keynote: Samory Kpotufe. Some new insights into transfer learning. SCZ 39

6 - 6:30 pm Prizes: Poster prizes and closing. SCZ 39

Be on Time
Keeping to our spirit of Ubuntu. Let us respect our speakers and participants and be on time for sessions.

Posters and Prizes
Poster sessions are relaxed events, and the usual way in which projects and research are communicated at the global machine learning conferences. Prizes will be awarded for posters and presenters that shine at the closing on Friday.

Computing & Setup
You **do not** need your own computer, but you can use your own if you like. You only need a browser and an internet connection. Before attending the Indaba you will have been asked to set up Google Colab, the tool used for the practicals (see webpage or your email for details).

Tutors
Look out for black t-shirts; ask for help during the coding sessions.

Registration
Sunday 11am-3pm, Chill Zone.
Monday 7:30-8:30am, Chill Zone.

Safety & Security
Keep your name badge on at all times. Access to all events will be with your name badge only. Always keep an eye on your belongings, and travel in groups at night.

Sponsors' Area
Visit them during the breaks, and ask them about their work, job opportunities, internships, mentorship, etc. Located in the centre of the Chill Zone.

Getting Lunch
You can find lunch in the Open Park and Chill Zone during the breaks each day between 1-2:30pm.

Toilets
You can find toilets in the buildings we use, and additional portable toilets in surrounding areas.

Parking
We have about 50 parking spots available right next to the plenary venue, SCZ 39.

Prayer Facilities
The University has a church and Mosque located a distance away from the main venue. Feel free to ask any university security/organizer you meet for directions.
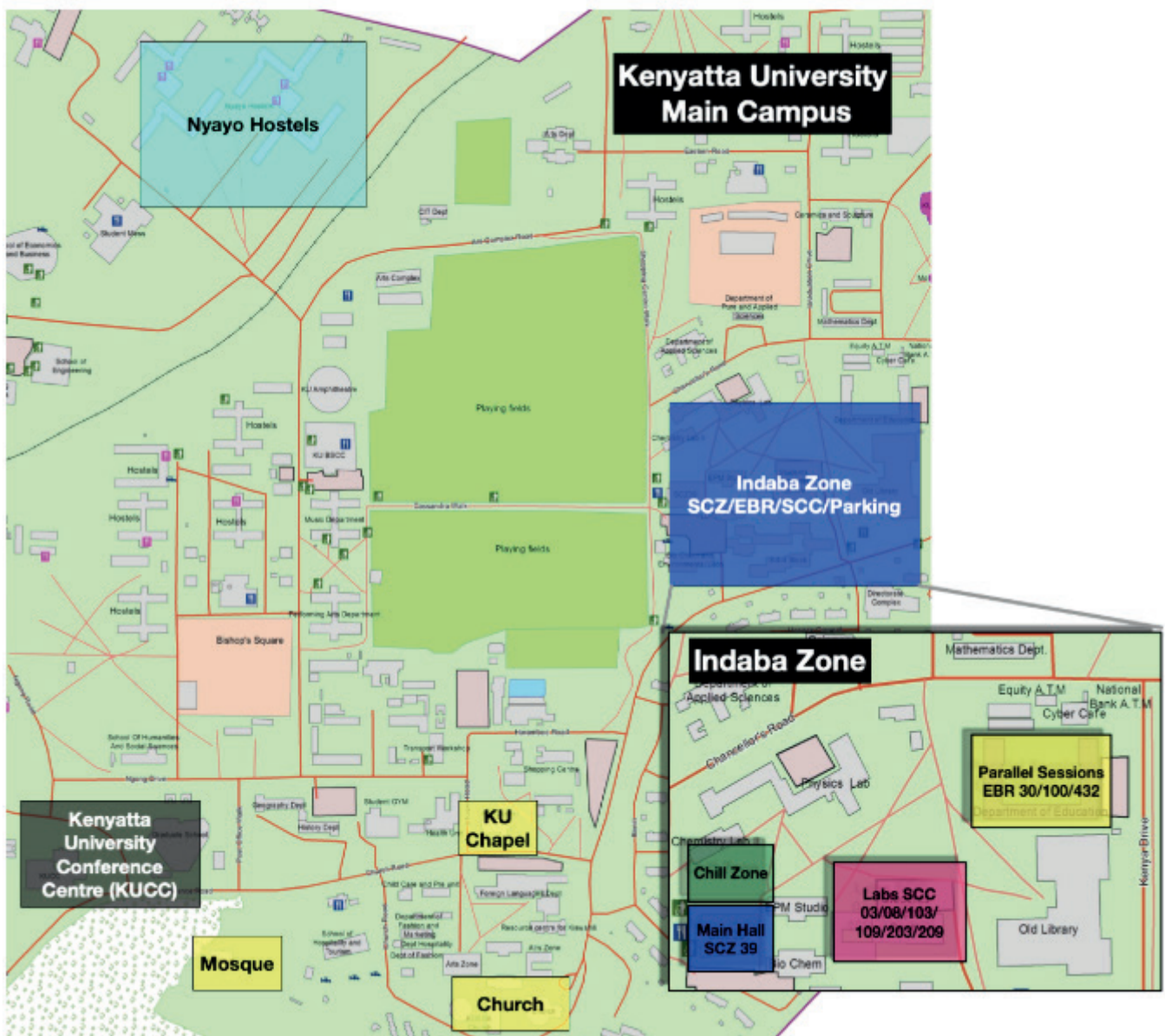
IndabaXTeensInAI
We are co-located with TeensInAI where for 3 days from 28-30 August around 40 teenagers from Kenya and elsewhere will participate in a smaller independent Indaba of their own. If you see them, say hi.

Emergency Contacts
   - Campus security: 0725 471 487
   - Police/Ambulance: 999/112/911
   - Code of conduct concerns/reports:
     conduct@deeplearningindaba.com

Maps and Locations

Key Locations:

- **Sponsor area:** Chill zone

- **SCZ 39:** Main Hall, all keynotes and some parallel sessions

- **EBR 30/100/432:** Parallel sessions and Posters.

- **SCC 03/08/103/108/203/209:** Student Computing Centre. Practicals.

- **Nyayo Hostels:** Accommodation for Indaba Participants

- **KUCC:** Accommodation and evening events.

- **Chill Zone:** Adjacent to the main hall. Breaks and food.

About Kenyatta University

We are proud to see the 2019 Indaba hosted at Kenyatta University, one of the leading universities in Kenya and is home to some of the world's top scholars, researchers and experts in diverse fields. The institution provides high quality programmes, has invested heavily in infrastructure and world class facilities and offers a nurturing environment in which students learn and grow.
To learn more, visit **ku.ac.ke**

Code of Conduct

Read the Code of Conduct again at **deeplearningindaba.com/conduct**
Our duty, as we come together at the Indaba, is to create a familyhood of people and cultures and learning, built on the principles of freedom, equality and unity; and towards the aim of strengthening African machine learning. The code of conduct outlines what the expected standards of behaviour at the Indaba are. It is every participant's responsibility to uphold it, and is how we maintain an environment that keeps everyone safe and welcome.
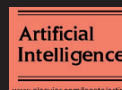
Thanks to our Sponsors

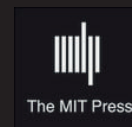**NILE TIER**

CONGO TIER

ZAMBEZI TIER

LIMPOPO TIER

TANA TIER

SUPPORTERS

Kenyatta University,
Kenya 25-30 August 2019

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