CROSS-SECTIONAL TEAM DEEP LEARNING – SHORT OVERVIEW

PROF. DR. – ING. MORRIS RIEDEL, JUELICH SUPERCOMPUTING CENTRE (JSC) / UNIVERSITY OF ICELAND

HEAD OF HIGH PRODUCTIVITY DATA PROCESSING & CROSS-SECTIONAL TEAM DEEP LEARNING

6TH OCTOBER, FEDERATED SYSTEMS AND DATA DIVISION, JUELICH SUPERCOMPUTING CENTRE, GERMANY

JÜLICH Forschungszentrum | JÜLICH SUPERCOMPUTING CENTRE

UNIVERSITY OF ICELAND
SCHOOL OF ENGINEERING AND NATURAL SCIENCES
FACULTY OF INDUSTRIAL ENGINEERING,
MECHANICAL ENGINEERING AND COMPUTER SCIENCE

STRATEGIC DIRECTIONS

Supporting Artificial Intelligence & Supercomputers – Relevance of HPC & AI in Europe

"By supporting strategic projects in frontline areas such as artificial intelligence, supercomputers, cybersecurity or industrial digitisation, and investing in digital skills, the new programme will help to complete the Digital Single Market, a key priority of the Union."

[9] COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE EUROPEAN COUNCIL, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS, EC, 2018, 2nd May 2018
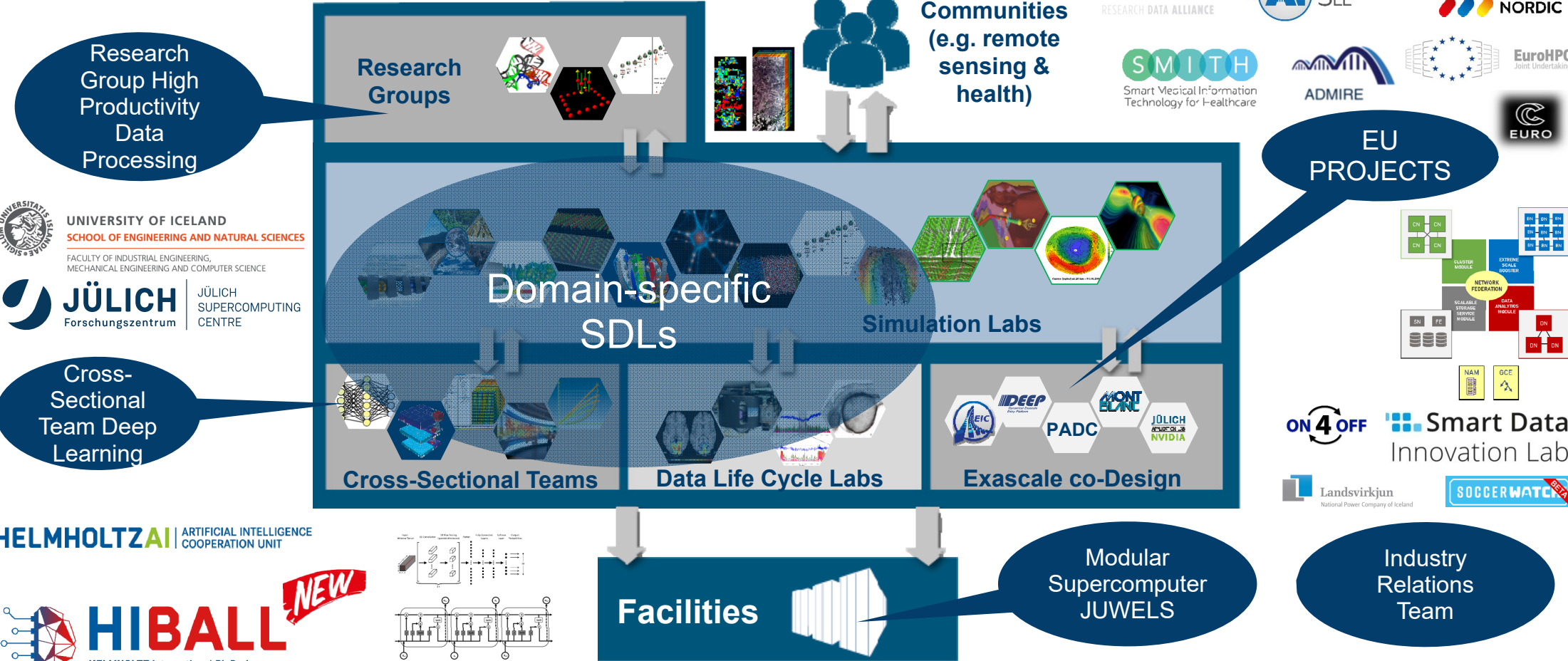

European Commission ✔ @EU_Commission · Apr 25

How can Europe be at the forefront of artificial intelligence, #dataeconomy, and digital healthcare?

@Ansip_EU @GabrielMariya @EBienkowskaEU @Moedas #DigitalSingleMarket #AI

45:15 4K viewers

Digital Single Market proposals: artificial intelligence, data econ...
European Commission @EU_Commission

💬 8   ♺ 109   ❤ 124   ✉

Mariya Gabriel ✔ @GabrielMariya   Follow

We are proud of you @fzj_jsc for the #firstclass #supercomputing facility you run. It is by efforts like yours that we reaffirm #EUaddedvalue and leadership in groundbreaking technologies. It is by cooperating that we will achieve our objectives for #EU leader in #HPC

8:28 AM - 5 Mar 2018

JUELICH SUPERCOMPUTING CENTRE (JSC) OF FZJ

Simulation & Data Labs (SDL) using High Performance Computing (HPC)

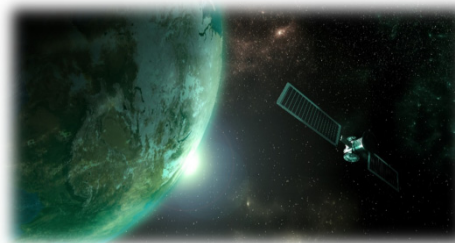Research Group High Productivity Data Processing

Research Groups

Communities (e.g. remote sensing & health)

Domain-specific SDLs

Simulation Labs

EU PROJECTS

Cross-Sectional Team Deep Learning

Cross-Sectional Teams

Data Life Cycle Labs

Exascale co-Design

Facilities

Modular Supercomputer JUWELS

Industry Relations Team

6th October 2020

Page 3

UNIVERSITY OF ICELAND

School of Engineering and Natural Sciences (SENS)

- Selected Facts
  - *Ranked among the top 300 universities in the world (by Times Higher Education)*
  - ~2900 students at the SENS school
  - Long collaboration with Forschungszentrum Juelich
  - *~350 MS students and ~150 doctoral students.*
  - *Many foreign & Erasmus students*
  - *English courses*

UNIVERSITY OF ICELAND
SCHOOL OF ENGINEERING AND NATURAL SCIENCES
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MECHANICAL ENGINEERING AND COMPUTER SCIENCE

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You Retweeted
University of Iceland @uni_iceland · Jun 7
It is extremely inspiring to be among the top 25 performers worldwide in internationally in collaboration with industry and international universities worldwide, according to a new evaluation from U-Multirank.

english.hi.is/news/at_the_fo...

2019 TOP 25 PERFORMER u multirank CO-PUBLICATIONS WITH INDUSTRIAL PARTNERS

2019 TOP 25 PERFORMER u multirank INTERNATIONAL JOINT PUBLICATIONS

2   7

Morris Riedel
@MorrisRiedel

The University of Iceland is one of the six best universities in the world in the field of remote sensing!

Háskóli Íslands @Haskoli_Islands
Háskóli Íslands er í 6. sæti yfir fremstu háskóla heims á sviði fjarkönnunar samkvæmt hinum virta Shanghai-lista. Skólinn er enn fremur í hópi hundrað bestu háskólanna innan jarðvísinda. Frábærar fréttir fyrir starfsmenn, stúdenta og samfélagið allt!

hi.is/frettir/haskol...

5:40 PM · Aug 15, 2019

9   See Morris Riedel's other Tweets

COMPLETED PHD RESEARCH STUDIES

(Dr.) Shiraz Memon (2020)

Security Expert for e-Infrastructures

Ph.D. Defence scheduled for December

Dr. Shahbaz Memon (2019)

Parallel & Scalable Data Analytics Expert

Dr. Markus Götz (2017)

Now Karlsruhe Institute of Technology (KIT)

Team Helmholtz AI @KIT Local Unit

HELMHOLTZ AI | ARTIFICIAL INTELLIGENCE COOPERATION UNIT

EuroHPC Joint Undertaking

EURO

AI See

ADMIRE
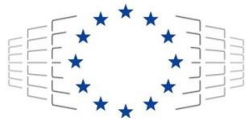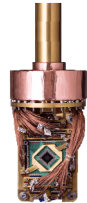
Dr. Gabriele Cavallaro (2016)

Now Deputy Head of Research Group High Productivity Data Processing

Remote Sensing Expert

Establish Remote Sensing Lab @ JSC

UNIVERSITY OF ICELAND
SCHOOL OF ENGINEERING AND NATURAL SCIENCES

FACULTY OF INDUSTRIAL ENGINEERING,
MECHANICAL ENGINEERING AND COMPUTER SCIENCE

High Performance Data Analytics (HPDA)

JÜLICH Forschungszentrum | JÜLICH SUPERCOMPUTING CENTRE

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SCIENTIFIC PRIORITIES – REMOTE SENSING & HEALTH
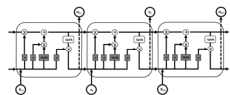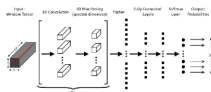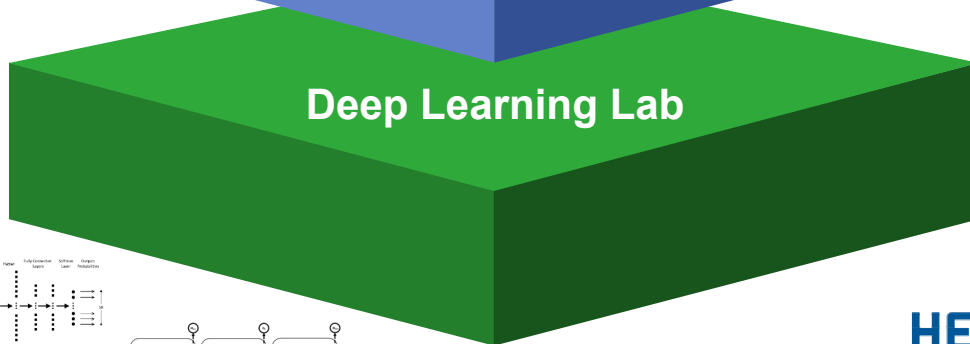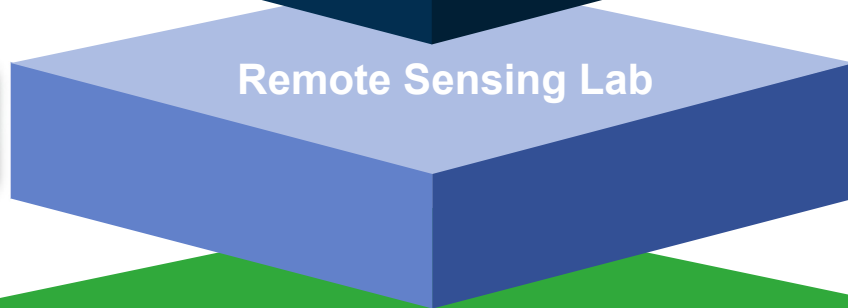
HIBALL
HELMHOLTZ International BigBrain
Analytics & Learning Laboratory
NEW

SMITH
Smart Medical Information
Technology for Healthcare

PostDoc Dr. Sebastian Fritsch &
Ph.D. Student Chadi Barakat &
Ph.D. Student Petur Helgi Einsarsson

Establish a Health AI Lab @ JSC

Health Lab

NEW

NEW

Ph.D. Student Rocco Sedona &
PostDoc Dr. Gabriele Cavallaro

Establish a Remote Sensing Lab @JSC

Remote Sensing Lab

ADMIRE
EuroHPC
Joint Undertaking

EUPEX
PROPOSAL

Deep Learning Lab

Dr. Jenia Jitsev & Prof. Dr. Morris Riedel

Drive AI Topics & provide ground for new AI labs @ JSC

HELMHOLTZ AI | ARTIFICIAL INTELLIGENCE
COOPERATION UNIT

NEW

Succesful Example: Helmholtz AI
Consultants as own JSC Lab

EURO

INDUSTRY PRIORITIES – RETAIL & ENGINEERING

NEW

Josefine Busch

Retail & Smart Cities Research

Smart Data Innovation Lab

adesso

UNIVERSITÄT DUISBURG ESSEN

IN-telegence

Hochschule Niederrhein
University of Applied Sciences

**Ph.D. Student Chadi Barakat &
Ph.D. Student Rocco Sedona**

Machine and Deep Learning with industrial data

Pieper
SEIT 1931 IN FAMILIENBESITZ

Thalia

ON 4 OFF

AI·SEE

NEW

Intense collaboration with Dr. Andreas Lintermann

New Ph.D. Student (not hired yet)

AI Topics in Engineering

Collaboration with JSC Industrial Relations Team

NEW

EURO
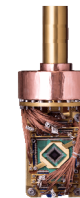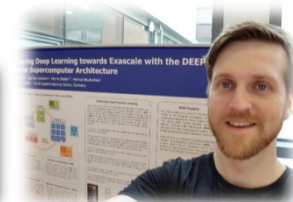
**Ph.D. Student "Reza"
Ph.D. Student "Ernir"**

National Competence Center for HPC & AI in Iceland

Icelandic High Performance Computing (IHPC) Expert Network as Iceland Competence Centre
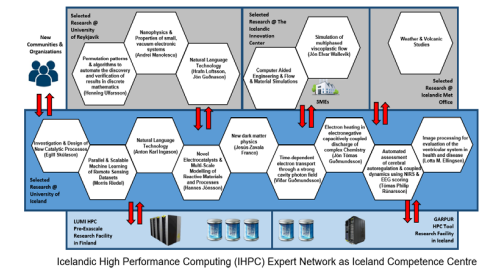
WORK HARD – PLAY HARD & FUN ALONG THE WAY…

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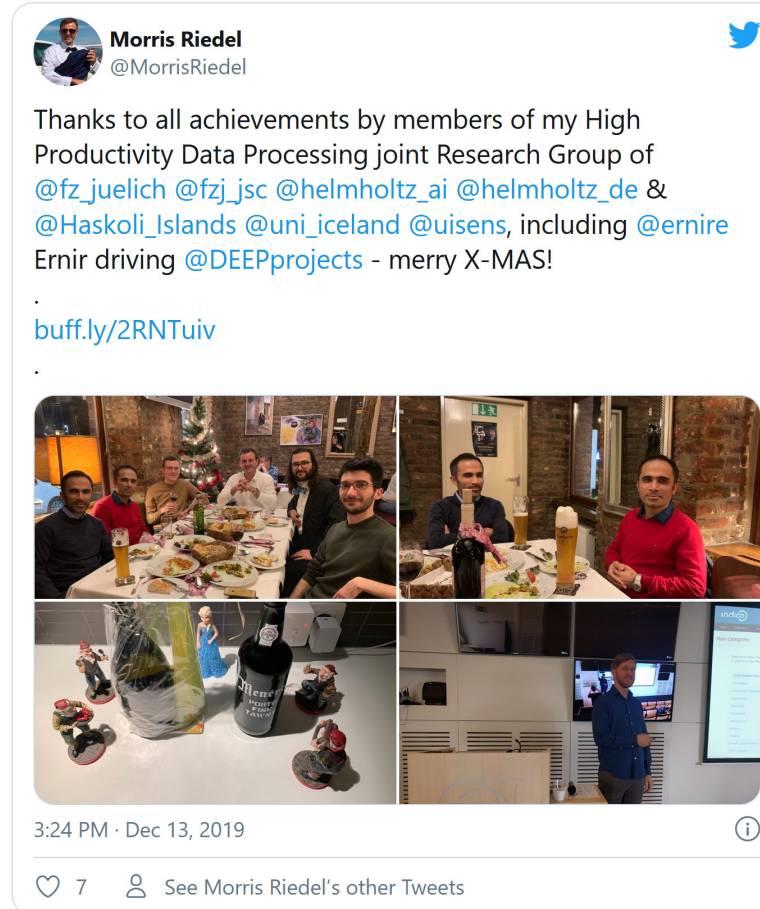
ACKNOWLEDGEMENTS

Previous & current members of the High Productivity Data Processing Research Group

Finished PHD in 2016

PD Dr. G. Cavallaro

Finishing in Winter 2020
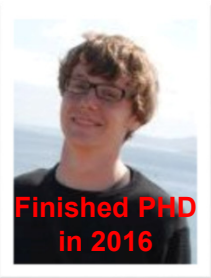
Senior PhD Student A.S. Memon

Finished PHD in 2019
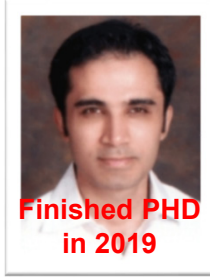
Senior PhD Student M.S. Memon

Mid-Term in Spring 2019
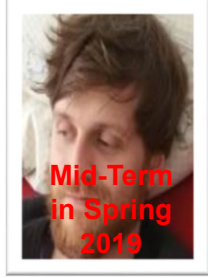
PhD Student E. Erlingsson

Started in Spring 2019

PhD Student S. Bakarat

Started in Spring 2019

PhD Student R. Sedona

Finished PHD in 2017

Dr. M. Goetz (now KIT)

Thesis Completed
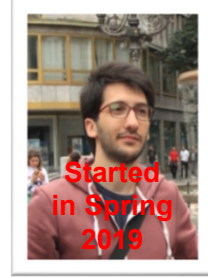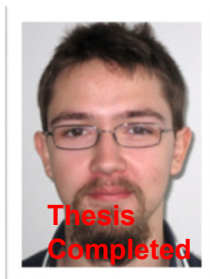
MSc M. Richerzhagen (now other division)

Thesis Completed
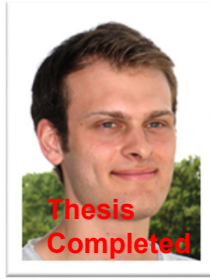
MSc P. Glock (now INM-1)

DEEP Learning Startup
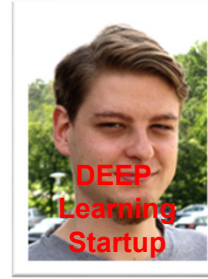
MSc C. Bodenstein (now Soccerwatch.tv)
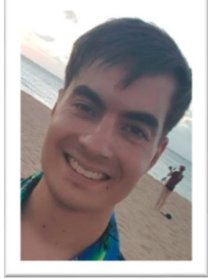
MSc Student G.S. Guðmundsson (Landsverkjun)