EYR@EaP 2018 Awards Ceremony

18 October 2018

Agenda

- What is EYR?

- EYR for EaPConnect

- EYR@EaP Program Results

- 2018 awards

EYR for EaPConnect

- Goal:
  - *Aims to stimulate the use of technology in research and using e-infrastructure resources in Eastern European countries*

- Builds the visibility of the NRENs with their end-users/research communities (with case studies, PR…)

- Provides e-infra resources BY the NREN or THROUGH the NREN to the researchers
  - *Network requests – capacity upgrades*
  - *Supercomputing resources*
  - *Engagement with other European researchers*
  - *Cloud infrastructure resources*
  - *Presentation and attendance at EaPEC*

- Program offered in 2016, 2017, 2018

→ EYR helps to build communities, use cases, and advocates around the R&E infrastructure

EYR@EaP Program Results

- 35+ proposals
- 7 final projects
- Topics
  - *Biomedical Imaging & Deep Learning*
  - *High Energy Physics*
  - *Geophyics*
  - *Tomography*
  - *EEG*
  - *Environmental Management & Education*
  - *Electro-Acoustic Music Composition & Artistic Research*
- Resources requested
  - *Compute resources in collaboration with PRACE*
  - *Guidance on Open Data and Open Science with OpenAIRE*
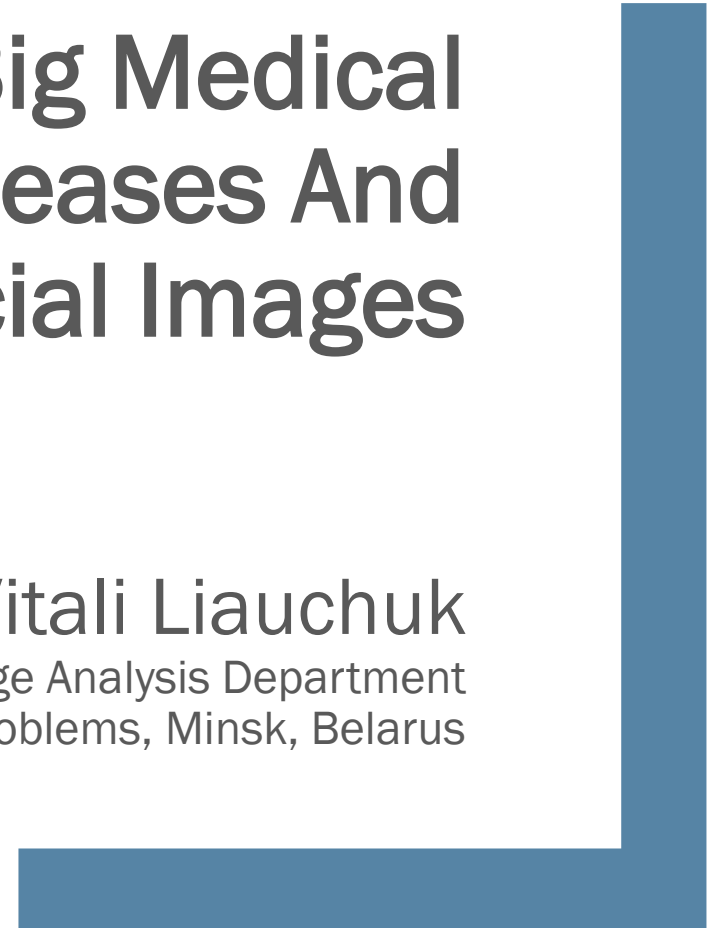 - *Cloud Resources*
  - *Network upgrades*

2018 Awards
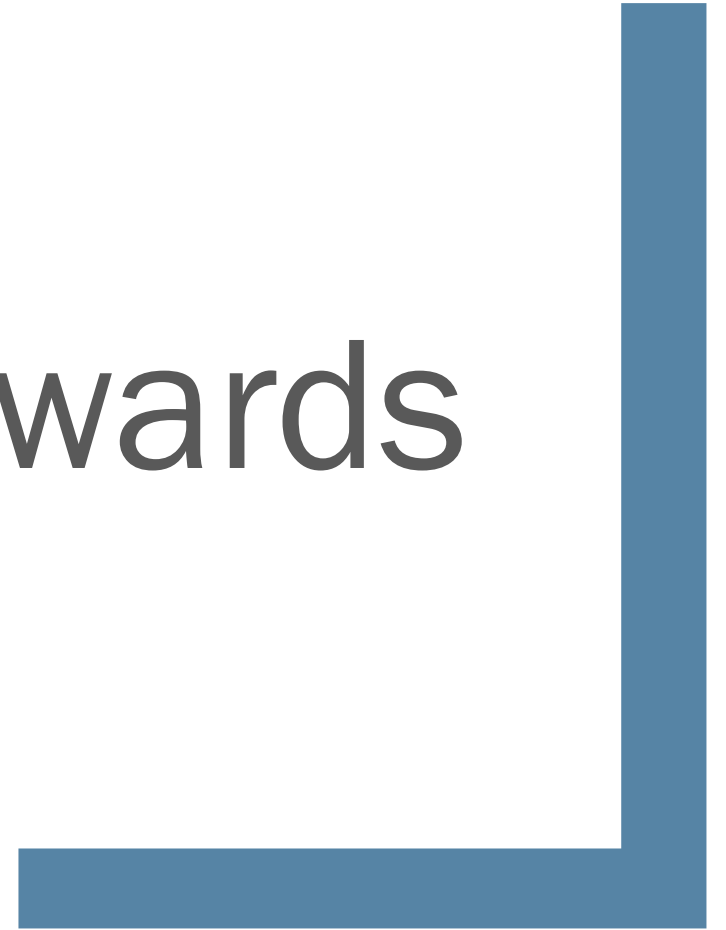
Deep Learning Applications For Big Medical Image Archives: Detection Of Diseases And Generation Of Artificial Images

Vitali Liauchuk

Biomedical Image Analysis Department
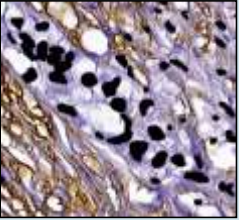United Institute Of Informatics Problems, Minsk, Belarus

Deep Learning applications for big medical image archives: detection of diseases and generation of artificial images

Vitali Liauchuk

Biomedical Image Analysis Department
United Institute of Informatics Problems, Minsk, Belarus

Chișinău, 2018

Big Medical Image Data: Our databases (3 examples)

| Pictogram	Image type & Number	Image Characteristics	Comments
	1.9 Million of chest X-rays of 1.1 Million of people (900 000 scanned ≥2 times). Results of large-scale screening	Quantitative characteristics (image features) can be derived by authors	To our best knowledge, this is the **world-largest** image collection of its sort
	12 000 CT tomography scans 9 000 patients (+ 4000 CTs by Tuberculosis Type) **1.5 million of 2D image slices**	100-300 2D images per scan. Clinical & Genomic data. Viewable at: http://tuberculosis.by/	Most annotated collection of 3D CT scans
	20 000 images, Ovary Cancer 65 Hyper-Large scans by 10 GigaPixels **(~2.3 Million of 512x512 image tiles)** Angiogenesis antibodies	Leica DMD108 Microscope Leica SCN400 Scanner Size: 2048×1536 Pixels and **100 000×100 000 Pixels**	

Tasks: Detection of tuberculosis lesions in X-ray and CT
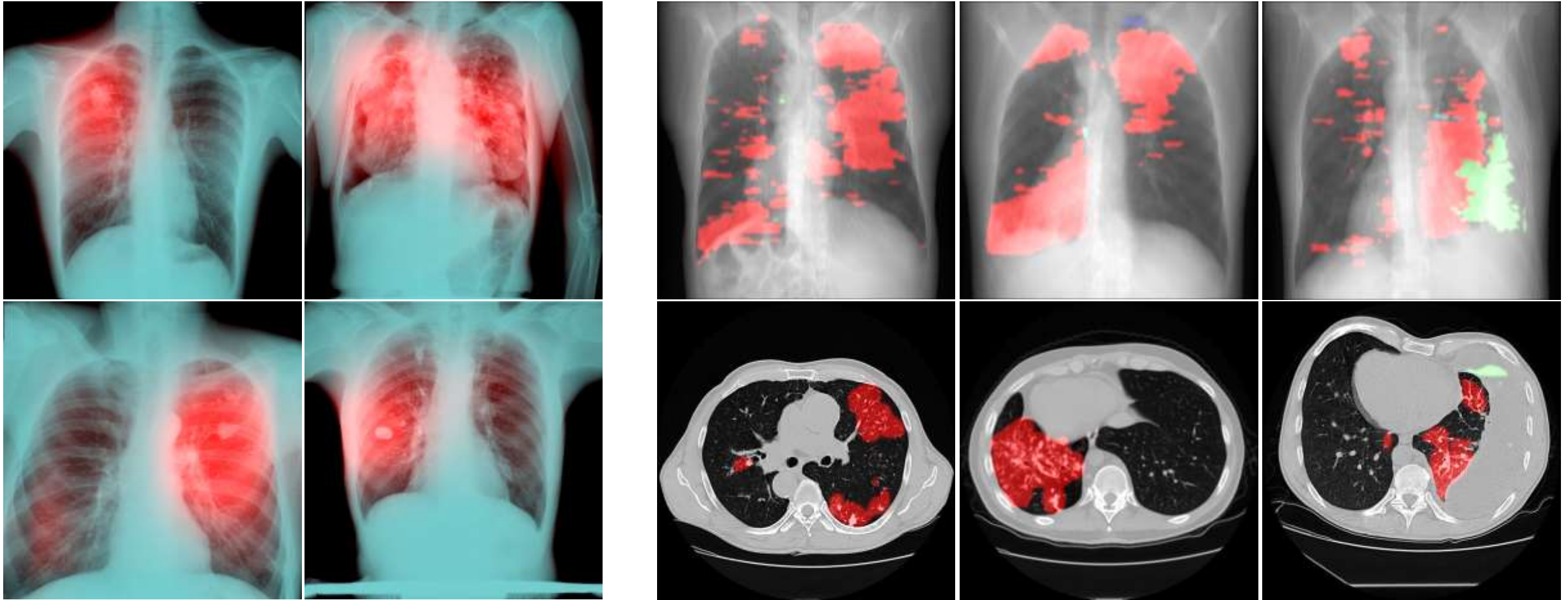
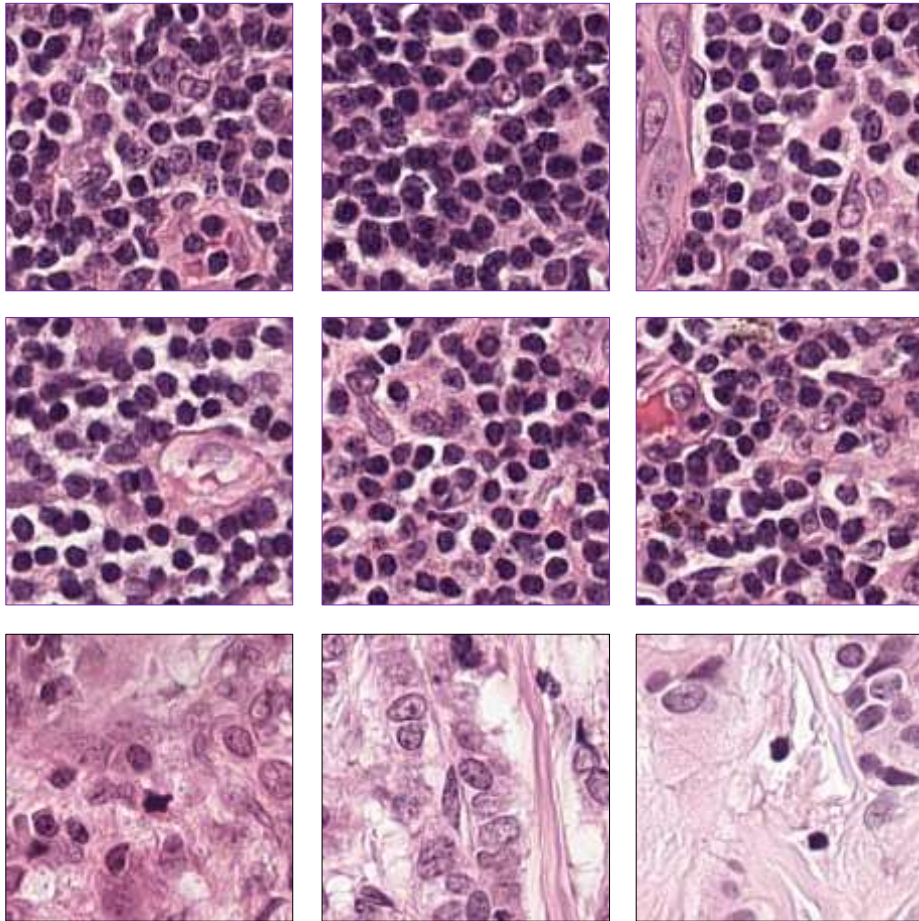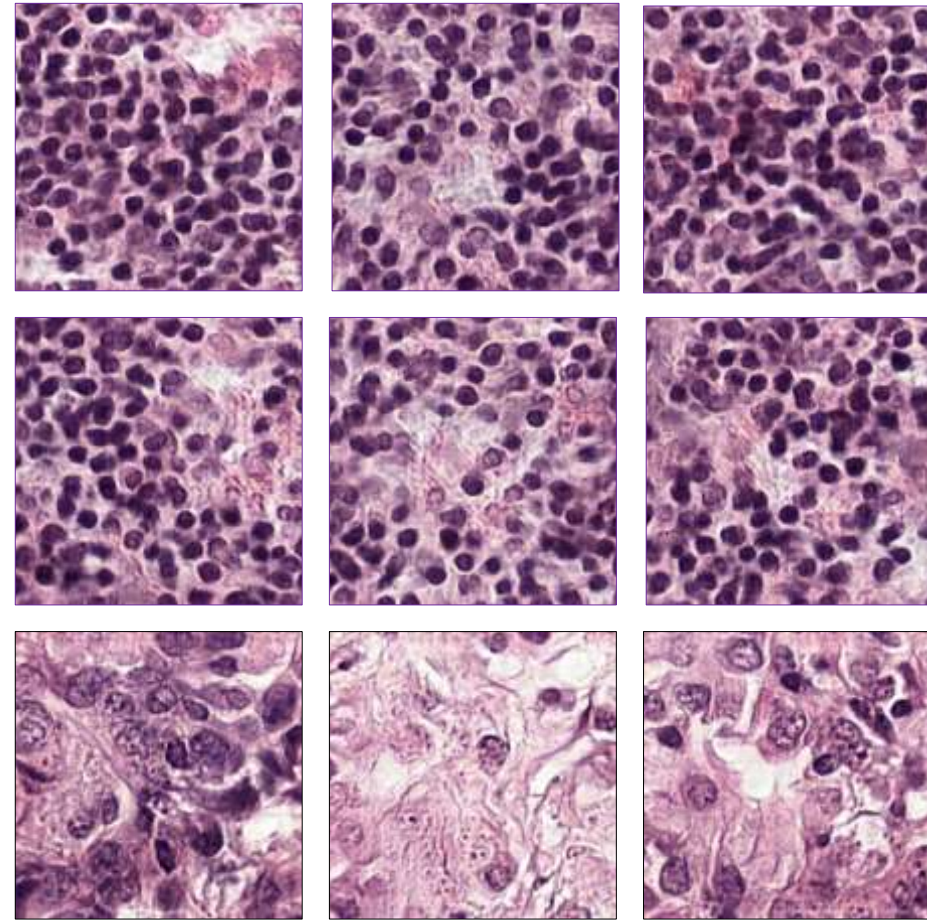# Tasks: Automatic generation of plausible artificial images
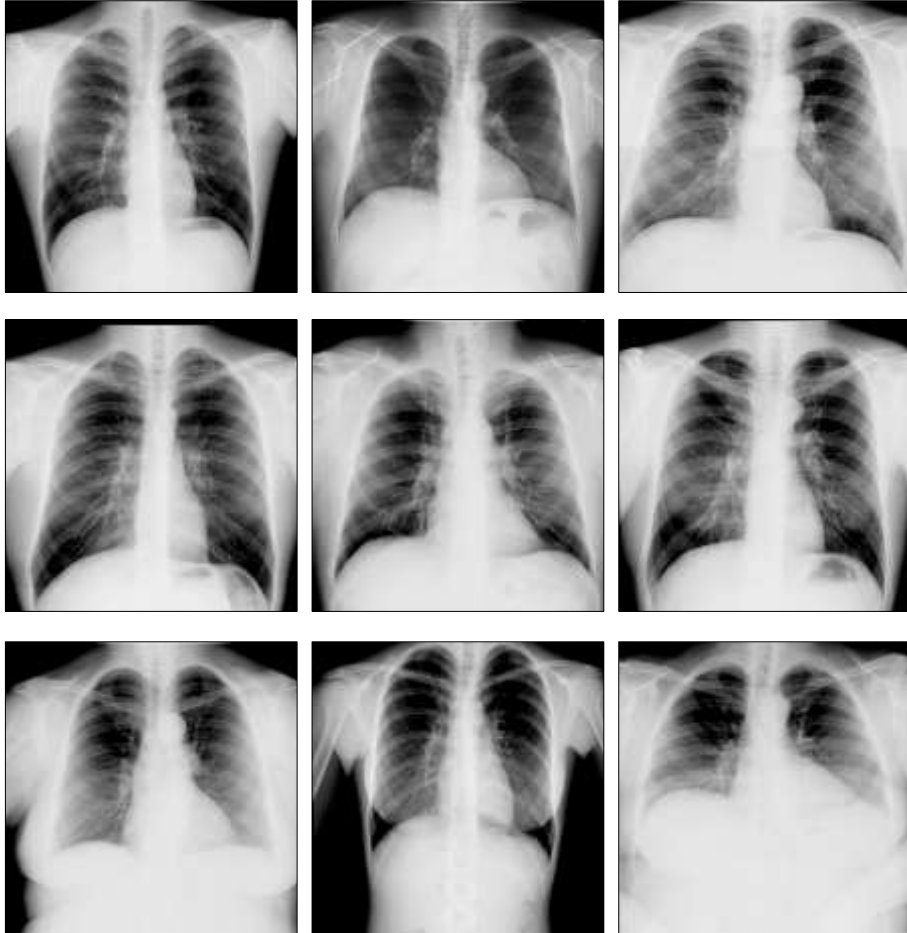
Images of Real people
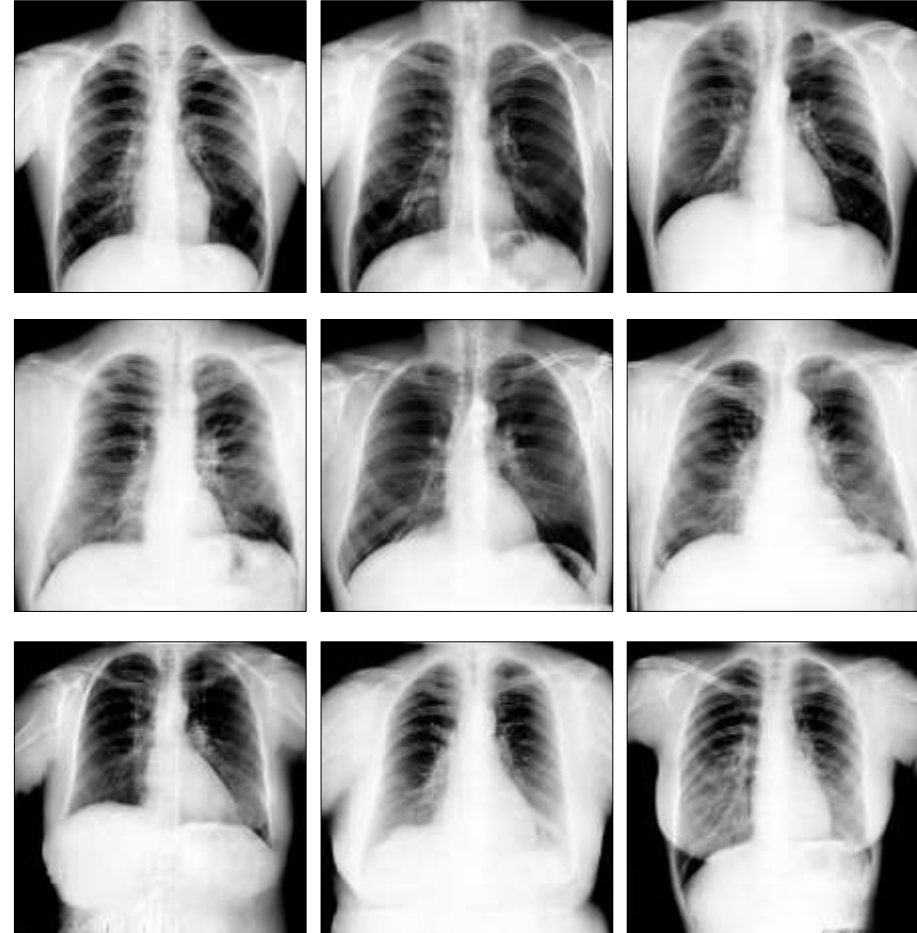
Artificial images created by GAN

Tasks: Automatic generation of artificial images

Norm

Cancer

Histology images of Real people

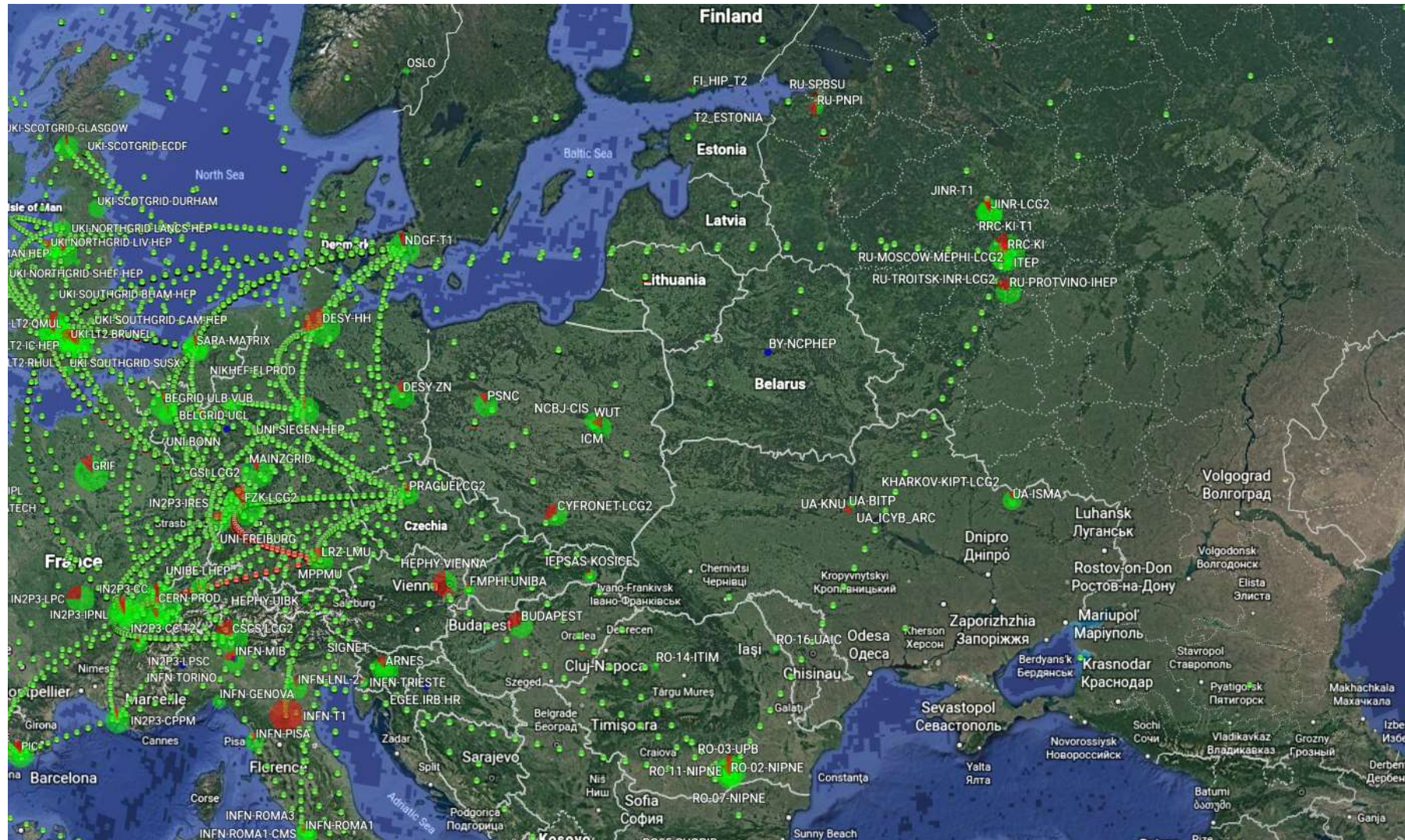**Artificial Histology images created by GAN**

Thank you for your attention

Belarusian WLCG computing facility BY-NCPHEP for research in High Energy Physics

Vitaly Yermolchyk

Institute for Nuclear Problems of Belarusian State University

# INP BSU computing facility for research in High Energy Physics

Development of a parallel algorithm ILST for the iterative reconstruction of 3D image based on the MPI system

Zolotarev Sergei Alekseevich

Institute of Applied Physics of NAS of Belarus

Finding EEG biomarkers of attention deficit hyperactivity disorder (ADHD), epilepsy in clinical settings using neuroinformatics

Irma Khachidze
Caucasus University, Georgia
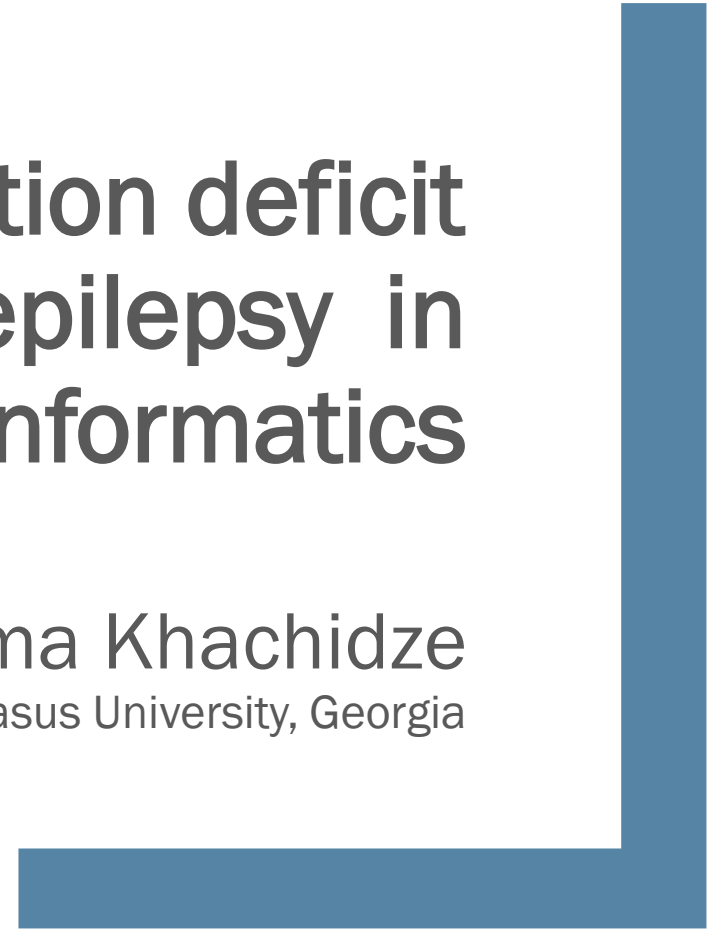
Development of educational programs for different target groups of population on environmental management based on the EU environmental Directives

Dumitru Drumea
NGO "ECOSTREGII", Moldova

Creating A Unified Database Of Well Logs Studying Of Oil And Gas Deposits In Azerbaijan

Hasanov Adalat Badal

Azerbaijan State Oil And Industry University

MIRCO: Music Instruments Renewal via Contemporary Creation

Paolo Girol

Estonian Academy of Music and Theatre