OLEKSIY GUZHVA

Researcher (DVM, MSc, PhD)

PROFILE

My research interests include new technological solutions for agriculture:

- Precision Livestock Farming (PLF);
- Computer Vision and Deep Learning algorithms for multi-purpose use within Smart Farming (animal and plant production);
- Big Data, IoT, data infrastructure as well as the practical on-site implementation of benchmark algorithms for farmers and practitioners;
- Data Science: EDA, data visualization, ML and DL for multi-variate predictions;
- Product development and project coordination;
- Biosecurity and management strategies for improved animal health and welfare;
- Smart farm buildings and functional animal-oriented production environment;

CONTACT

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EDUCATION

PhD, Swedish University of Agricultural Sciences (SLU)
April 2014 – June 2018
Thesis title: "Computer vision algorithms as a modern tool for behavioural analysis in dairy cattle".

MSc, Swedish University of Agricultural Sciences (SLU)
August 2011 – June 2013
Thesis title: "Exercise pasture compared with production pasture in a part-time grazing system with automatic milking".

DVM, Poltava State Agrarian Academy, Poltava, Ukraine
September 2004 – June 2010
Thesis title: "Usage of Specific Prophylactic Means and Therapy of Trichophytia in Cats and Dogs".

WORK EXPERIENCE

Swedish University of Agricultural Sciences (SLU), Department of Biosystems and Technology, Unit for Technology and Digitalisation
Researcher
October 2018 – Present
Responsibilities: research, teaching (20%, including course responsibility for BI1219 "Animal Production Systems and Management"), supervision of students (undergraduate, as well as PhD), extension and consultancy work with industry, PoC projects on-demand aiming at innovation, cross/multi-disciplinary collaboration and effective project management within AgTech sector.

Swedish University of Agricultural Sciences (SLU), Department of Biosystems and Technology, Unit for Animal Environment and Building Function
PhD Student
April 2014 – June 2018
Responsibilities: project work, teaching, supervision of students, contacts with industry and related pilot/shorter projects, RADAR/Horizon 2020 working group (Horizon SFS46-call proposal coordination).

Lövsta Dairy Cattle Facility, Swedish Livestock Research Centre, SLU, Uppsala, Sweden
Research Animal Caretaker
March 2012 – March 2014
Responsibilities: VMS and AMR maintenance and related logistics, animal feeding, treatments, calf health and housing;

Samsö Dairy Farm, Samsö, Denmark
Animal Caretaker
June 2010 – May 2011
Responsibilities: Daily farm work, animal feeding, animal treatments, herd health, maintenance of the machinery, crop management;

IT-consultancy, Freelance, Poltava, Ukraine
September 2004 – December 2010
Responsibilities: software and hardware support, system administration, network security, user support and education;

Domain Expert (Animal Production/Sensor Technology), Sony AB, Lund, Sweden (via SLU Alnarp)
October 2016 – 2018

Data Science/Computer Vision consultant, DeLaval AB, Tumba, Sweden
April 2020 – July 2020

LANGUAGE PROFICIENCY

- Ukrainian (native)
- Russian (native)
- English (fluent)
- Swedish (fluent)

PROGRAMMING LANGUAGES

- MATLAB
- Fortran95
- Python
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PEER REVIEW ACTIVITY (FINISHED REVIEWS)

- 2017 – 1 article
- 2018 – 5 articles
- 2019 – 14 articles
- 2020 – 3 articles

Member of a reviewer board for MDPI Journal "Animals" (Impact Factor 1.832);

Review Editor in "Animal Behaviour and Welfare", Frontiers in Veterinary Science (Impact Factor 2.245);

Associate Editor in "Precision Livestock Farming", Frontiers in Animal Science;

ADMINISTRATIVE WORK

- Representative at FN-LTV (Faculty Board) SLU Alnarp – 2019 – 2022
- Domain (Animal Production and Technology) representative at Partnership Alnarp (PA) – 2016 – present

PROJECT LIST

Innovative on-farm broiler welfare assessment using imaging techniques (InnoBroilerImage) – 610 000 USD, Co-applicant
2019 – Present
Project group: Wageningen University & Research, Utrecht University, Swedish University of Agricultural Sciences, Virginia Tech, Plukon Food Group.

SmartResilience: towards a sustainable, future-oriented pig production system that supports and predicts resilience and welfare in pigs – Co-supervision of PhD student and Guest Lecturer
2018 – Present
Project group: Wageningen University & Research, Utrecht University, Swedish University of Agricultural Sciences.

Digital supervision on pasture – 7.4MSEK, Co-applicant
2020 (on-going) – 2023
Project group: SLU (Anna Hessle – project leader, Oleksiy Guzhva, Niclas Högberg, Lena Lidfors). The project is a joint collaboration of several partners. Innovator company is Svarta Räven AB, with SLU being responsible for validation of the final technology and control of the development (with SLU Götala research facility used as an initial testbed). Other parties include Intakan AB, Syntera AB, RISE, Zellout, Contourline Tech. AB, AWA, Agroväst och DesignWise.

"Digital"-ised pig production: are we there yet and what do we need to advance? (Part of a larger IoT PoC study) – 350TSEK, Co-applicant
2018 - 2019
Project group: SLU (Oleksiy Guzhva – project leader, Maria Rørvang), Sony AB (Lund, Sweden).

Erasmus+ project - Smart faRming innOvatiOn Training (SmartROOT) – 750 000 Euro, Co-applicant
2021 – 2024
Project Group: The project involves three universities, three private companies and one association.

RELEVANT PUBLICATIONS

Guzhva, O., Siegford M.J. and Lunner Kolstrup, C. (2020). To sustainability and beyond: exploring the inclusion of social and ethical issues in the developments of Precision Agriculture using Latent Dirichlet Allocation. (manuscript submitted)

van der Zande, L., Guzhva, O. and Rodenburg, B. (2020). Individual detection and tracking of group housed pigs in their home pen using computer vision. (manuscript submitted)

Sanchez-Mainar, M. et al. (2019). IDF Animal Health Report N°13 2019

Guzhva, O. & Rørvang, M. (2019). Digitaliserad grisproduktion. LTV-Faktablad. https://pub.epsilon.slu.se/15943/

Ellen, E. et al. (2019). Review of Sensor Technologies in Animal Breeding: Phenotyping Behaviors of Laying Hens to Select Against Feather Pecking *Animals,* 9 (3), DOI: 10.3390/ani9030108

Guzhva, O. et al. (2018). Now You See Me: Convolutional Neural Network Based Tracker for Dairy Cows. Front. Robot. AI, 19 September 2018 https://doi.org/10.3389/frobt.2018.00107

Ardö, H. et al. (2018). Convolutional neural network-based cow interaction watchdog *IET Computer Vision,* 12 (2), DOI: 10.1049/iet-cvi.2017.0077

Guzhva, O. et al. (2016). Feasibility study for the implementation of an automatic system for the detection of social interactions in the waiting area of automatic milking stations by using a video surveillance system *Computers and Electronics in Agriculture,* 127 DOI: 10.1016/j.compag.2016.07.010