CTU Global Postdoc Fellowship

Czech Technical University in Prague now offers a new fellowship program, the CTU Global Postdoc Fellowship. This new and attractive two-year fellowship-program offers excellent researchers who have recently completed their PhD the chance to continue their research career at CTU. Fellows receive a two year fellowship and become members of a team led by a mentor.

The scholarship applicant must meet the following conditions on the date of application

- be no more than 7 years since obtaining the first PhD degree,
- PhD. studies at a university outside the Czech Republic or have completed at least a one-year working research stay abroad (outside the Czech Republic),
- be an author (co-author) of three or more publications in a journal with IF CORE A*/A conference paper.

The CTU Global Postdoc Fellowship is open to all topics listed later in this document. Researchers are invited to apply directly to the faculty/institute, see details below. The mentor has a strong vote in the selection process.

Applicants are advised to contact mentors for more details.

The deadline for submission is indicated for each research topic/position.

Document version 1.10_05. 01. 2026

CTU Global Postdoc Fellowship

Topics/positions available at the

Faculty of Electrical Engineering

Applications should be sent to

E-mail: drimakat@fel.cvut.cz

or

FEL ČVUT
Zaměstnanecké oddělení
Attn: Ing. Kateřina Dřímalová
Technická 2
166 27 Praha 6
Czech Republic

CTU Global Postdoc Fellowship

Research topic #3-23

1 Topic name	#3-23: Modern Modulation and Control Algorithms for AC Drives with Non-Conventional Inverter Structures
ERC research field descriptor	15.11, 15.12
2 Link to topic / project page	
3 Short description of the topic	The topic focuses on the control of AC electric drives (IM or SynRM) focused on utilization of less known inverter topologies (e.g. Dual inverter, 4 bridge inverter) with modern semiconductor devices (GaN, SiC) The aim is to implement own designed algorithms in a signal processor and simulation environment. The proposed modulation and control strategy should pursue the objectives of increasing the efficiency or reliability of the traction drive by means of suitably modified control based e.g.: ● on improved mathematical models compensating for parameter variation, ● on increasing the drive dynamics and control accuracy, improving the efficiency, ● on maximizing the use of the capabilities of modern signal processors or FPGA circuits in the control of electric drives, ● on utilization of SiC or GaN semiconductors in power converter circuit.
4 Description of the ideal candidate	The candidate should hold a Ph.D. in electrical or control engineering, or power electronics, obtained within the last 5 years. A very good knowledge of electric drives and power electronics. Proficiency in written and oral English. The candidate should have a proven track record of research excellence, with more than 3 papers published as the main author in SCIE journals (Q1/Q2 prefered).

Mentor

Jan Bauer	Faculty of Electrical Engineering	Control Engineering	bauerja2@fel.cvut.cz

Salary: CZK 75 000 per month
Application deadline: 15 February 2026
Start date: 01 March 2026

CTU Global Postdoc Fellowship

Research topic #3-24

1 Topic name	#3-24: Advanced Medium-Entropy Alloy Systems for Sustainable and Safe Nuclear Energy
ERC research field descriptor	32.19 surface physics
2 Link to topic / project page	https://nano.cvut.cz/jobs-opportunities/ Advanced Medium-Entropy Alloy Systems for Sustainable and Safe Nuclear Energy
3 Short description of the topic	Ensuring the safety and longevity of nuclear reactors requires structural materials that can maintain integrity under extreme thermal, mechanical, and irradiation environments. Current Accident-Tolerant Fuel (ATF) cladding strategies, such as Cr-coated Zr alloys, face challenges due to interdiffusion and phase instability at elevated temperatures, especially the formation of brittle $ZrCr_2$ Laves phases. Moreover, radiation-induced helium accumulation and swelling continue to undermine coating durability and adhesion. This project proposes to design and investigate medium-entropy alloy (MEA) interlayers and coatings based on the Cr–Zr compositional system, engineered to stabilize interfaces and enhance radiation resistance under hydrogen and heavy ion irradiation. By tuning chemical disorder and lattice strain within the MEA structure, we aim to suppress interdiffusion, promote defect recombination, and mitigate radiation defect formation. The study will combine ion irradiation experiments (He^+, H^+, and Fe^{2+}) with advanced microstructural characterization (TEM, FIB, EBSD, APT) to elucidate the atomic-scale mechanisms governing interface stability and helium transport. The ultimate goal is to establish design principles for radiation-tolerant Cr-Zr-based MEA coatings, contributing to the next generation of high-performance ATF claddings that ensure enhanced safety and extended service life in nuclear reactors.
4 Description of the ideal candidate	The ideal candidate for this position should possess the following qualifications: A PhD (or Postdoctoral experience) in Materials Science, Nuclear Engineering, or Condensed Matter Physics. Proven experience with ion irradiation studies, microstructural analysis, and radiation damage characterization. Familiarity with magnetron sputtering, multilayer coatings, or alloy design will be highly advantageous. Skills in Focused Ion Beam (FIB) sample preparation and Transmission Electron Microscopy (TEM) are preferred. Strong publication record and collaborative mindset, with experience mentoring junior researchers or students. Excellent communication skills in English and a passion for contributing to sustainable nuclear materials research.

Mentor

Nabil, Daghbouj	Faculty of Electrical Engineering	Control Engineering	daghbnab@fel.cvut.cz

Salary: CZK 75 000 per month
Application deadline: 15 February 2026
Start date: 01 March 2026

CTU Global Postdoc Fellowship

Research topic #3-25

1 Topic name	#3-25: Versatile resilient robots with whole-body tactile sensing
ERC research field descriptor	9.5, 9.8
2 Link to topic / project page	https://sites.google.com/site/matejhof/research/cobots-and-hri
3 Short description of the topic	In animals and humans, contacts with the environment are not avoided and sometimes even actively sought. We will deploy this inspiration from biology to design truly robust machines with distributed control systems, exploiting whole-body contacts with the environment. The main platforms will be robot manipulators or humanoids completely covered with sensitive electronic skin, learning their controllers in a biomimetic fashion (e.g., emulation of sense of pain, withdrawal reflex). The final scenario will be reaching and grasping objects exploiting whole-body contacts, with no or sparse visual inputs. We will demonstrate that reaching and grasping tasks can be accomplished even if conditions dramatically change, for instance when encoder values are manipulated with large offsets, a joint is completely blocked, or a camera observing the workspace is significantly distorted.
4 Description of the ideal candidate	We seek highly motivated applicants with a PhD in robotics, AI, or related fields and a proven track record - publications in top conferences or journals - relevant to the topic.

Mentor

Matěj Hofmann	Faculty of Electrical Engineering	Control Engineering	matej.hofmann@fel.cvut.cz

Salary: CZK 75 000 per month
Application deadline: 15 February 2026
Start date: 01 March 2026

CTU Global Postdoc Fellowship

Research topic #3-26

1 Topic name	#3-26: Computational study on electrode materials for ozone generation
ERC research field descriptor	Code 32.6, label “Computational physics”, ID 350
2 Link to topic / project page	https://leee.fel.cvut.cz/Stud.html
3 Short description of the topic	Ozone is a powerful oxidizing agent with applications in water treatment, air disinfection, food processing, and material coatings. It effectively eliminates pathogens and pollutants without leaving harmful residues. The most common method, surface dielectric barrier discharge (SDBD), uses micro-discharges to convert O_2 into ozone. Several key factors govern the discharge mechanism. The material of the active electrode determines its work function, which in turn affects Townsend breakdown characteristics and the secondary electron emission coefficient. Additionally, the dielectric properties of the material affect surface charge distribution and the overall electric field. The research on the influence of electrode material on the efficiency of ozone generation in SDBD represents an area that has not yet been sufficiently explored. To this aim, the present project will employ ab initio calculations to understand the atom-scale phenomena determining the electrode surface oxidation and the relative electric conduction properties. Surface/ozone interaction will be analysed via electronic descriptors, to identify preferential ozone adsorption sites and activation barriers for oxidation reactions, and to estimate corrosion and degradation rates. The results will constitute guidelines to select the best candidate materials to produce electrodes for ozone production with enhanced performance and durability.
4 Description of the ideal candidate	Applicants should hold a PhD in Physics, Chemistry, Materials Science, or a closely related field. Proficiency in ab initio calculations is required. Prior experience with molecular dynamics simulations is considered an advantage. Candidates will be expected to conduct simulations on Linux-based high-performance computing (HPC) systems. A strong command of English, both written and spoken, is essential.

Mentor

Jan Mikeš	Faculty of Electrical Engineering	Control Engineering	mikes.jan@fel.cvut.cz

Salary: CZK 75 000 per month
Application deadline: 15 February 2026
Start date: 01 March 2026

CTU Global Postdoc Fellowship

Research topic #3-27

1 Topic name	#3-27: Smart Grids, Power System Stability and Sustainability
ERC research field descriptor	15.11, 15.12, 15.27
2 Link to topic / project page	http://k315.feld.cvut.cz/cs/content/enthemes-thesis
3 Short description of the topic	The electric power industry is under pressure to phase out conventional power plants, especially coal, and increase the share of renewables in their energy mix. This trend changes the traditional power system behavior and ways of power system control. With a larger share of renewables, the overall system inertia has decreased. However, the industry has to learn how to operate synchronous generators in a system with a larger share of solar and wind that does not utilize SGs with large inertia. The candidate is expected to cooperate in development of new power system operation strategies or control strategies using most up to date technologies. We are looking for experience in: - Flexible AC transmission system (FACTS) devices - Artificial stability - Smart Flexibility Systems (e.g. H2flex) - Wide Area Systems (WAMS, WACS, WAPS etc.) It is preferred to continue with previous candidate research topic. The research will be supported by experienced group of researchers with close link to the power industry.
4 Description of the ideal candidate	- PhD from Electrical Engineering - Very good publication record - Experience in Power System Simulation (distributed generation, smart grids, power system stability)

Mentor

Zdeněk Muller	Faculty of Electrical Engineering	Control Engineering	zdenek.muller@fel.cvut.cz

Salary: CZK 75 000 per month
Application deadline: 15 February 2026
Start date: 01 March 2026

CTU Global Postdoc Fellowship

Research topic #3-28

1 Topic name	#3-28: Multilevel Modeling of Outcome Predictors Following Subthalamic Deep Brain Stimulation in Parkinson's Disease
ERC research field descriptor	29.3
2 Link to topic / project page	https://aid.fel.cvut.cz/projects/#computational-neuroscience
3 Short description of the topic	We invite applications for a postdoctoral position focused on the development of predictive models for clinical outcomes following Deep Brain Stimulation (DBS) in Parkinson's disease. The research will center on identifying robust, interpretable predictors of motor improvement after subthalamic nucleus (STN) DBS, integrating preoperative clinical, motor, neuropsychological, and imaging data. Building on recent critiques of overfitted prediction models, the project will implement a structured, multi-tiered analytical framework, comparing classical regression techniques with modern penalized and hierarchical modeling strategies. The successful candidate will contribute to outcome definition, data analysis, and model development, and will have the opportunity to engage in advanced statistical methods such as dimensionality reduction and Bayesian modeling. This project offers access to a rich, curated clinical dataset and collaboration with leading neurologists, neurosurgeons, and data scientists.
4 Description of the ideal candidate	The ideal candidate holds a PhD in neuroscience, biomedical engineering, computational biology, biostatistics, or a related discipline, with a strong background in clinical data analysis and predictive modeling. Experience with multivariate regression techniques, dimensionality reduction and/or machine learning methods (e.g., Lasso, ridge regression) is highly desirable. Familiarity with neurostimulation, Parkinson's disease, or neuropsychological assessment tools is considered a strong advantage. Proficiency in statistical programming languages such as Python, R, is expected, as is the ability to work with complex clinical datasets and handle missing data thoughtfully.

Mentor

Daniel Novák	Faculty of Electrical Engineering	Control Engineering	xnovakd1@fel.cvut.cz

Salary: CZK 75 000 per month
Application deadline: 15 February 2026
Start date: 01 March 2026

CTU Global Postdoc Fellowship

Research topic #3-29

1 Topic name	**#3-29: Density of States Analysis on Semiconductor Nanomaterials for Advanced Functional Interfaces**
ERC research field descriptor	7.13, 15.12, 15.17, 32.4, 32.6, 32.16, 32.19, 37.21, 37.22, 37.27
2 Link to topic / project page	https://phys.fel.cvut.cz/en/applied-physics-topics-for-phd-thesis/ https://tacom.fel.cvut.cz/en/
3 Short description of the topic	Insight into energy band profiles, band edges, band alignment, and distribution of defect states is crucial for understanding and enhancing the performance of semiconductor nanomaterials across diverse applications in optoelectronics, spintronics, energy conversion, photocatalysis as well as biosensor technologies. Yet experimental characterization of these features and corroboration with theoretical calculations remain challenging. This project aims to integrate energy-resolved electrochemical impedance spectroscopy (EREIS) with DFT atomistic simulations to investigate the electronic structure and defect states in wide bandgap semiconductor nanomaterials. The goal is to better understand and optimize function of such nanomaterials, their surfaces and interfaces for prospective topical applications. The work will be supported by complementary spectroscopic and microscopic techniques available in the group and aims to enhance the group expertise, international collaborations, and overall research quality and impact.
4 Description of the ideal candidate	Successful candidates must have a PhD in Physics, Chemistry, Materials Science, Electrical Engineering or closely related disciplines. Prior publication track record in impacted journals with at least 3 papers as the first author and very good command of spoken and written English are mandatory. Good communication skills, initiative and team work are demanded. Prior professional experience abroad from a home country is advantageous. EU citizenship or Schengen visa is also advantageous.

Mentor

Bohuslav Rezek	Faculty of Electrical Engineering	Control Engineering	rezekboh@fel.cvut.cz

Salary: CZK 62 000 per month
Application deadline: 15 February 2026
Start date: 01 March 2026

CTU Global Postdoc Fellowship

Research topic #3-30

1 Topic name	#3-30: Instance-level visual generation
ERC research field descriptor	9.5, 9.8
2 Link to topic / project page	https://vrg.fel.cvut.cz
3 Short description of the topic	Recent progress in text-to-image generation, fueled by diffusion models and large-scale training, has greatly improved image synthesis aligned with textual prompts. This project, however, focuses on a complementary challenge: generating diverse image variations that preserve the identity and fine-grained appearance of a specific object. The variations may involve changes in background, illumination, viewpoint, or non-rigid deformations. The target object will be defined either by an exemplar image or a detailed textual description. The resulting images will support training and evaluation of instance-level (particular object) recognition systems. In the literature, this line of work falls under *personalized generative modeling*, where "personalization" refers to conditioning on a specific object instance. Giorgos Tolias is an associate professor at CTU in Prague and a member of the Visual Recognition Group (VRG). He is currently leading a small team within VRG supported by a Junior Start GACR Grant. From 2014 to mid-2015 he was a postdoc at the LinkMedia team of Inria Rennes, while he obtained my Ph.D from the NTUA, Greece in 2013. He is an associate editor of IJCV and was an area chair for ECCV2020, ECCV2024, and ICCV2025. His work has been published numerous times in top computer vision conferences and journals such as CVPR (x13), ECCV (x6), ICCV (x3), IJCV (x3) and PAMI (x1). His work received a best paper award honorable mention at BMVC'17 (core rank A). Advising history: postdocs (1+2current), PhD (1+4 current) MSc (13), Bc (5)
4 Description of the ideal candidate	The ideal candidate has a strong research background in generative models, particularly in text-to-image synthesis and/or personalized generation that preserves object identity or style. They should have a solid publication record in top-tier computer vision conferences such as CVPR, ICCV, or ECCV, and demonstrate proficiency in deep learning frameworks (e.g., PyTorch), experience with large-scale datasets, and a collaborative mindset.

Mentor

Giorgos Tolias	Faculty of Electrical Engineering	Control Engineering	toliageo@fel.cvut.cz

Salary: CZK 75 000 per month
Application deadline: 15 February 2026
Start date: 01 March 2026

CTU Global Postdoc Fellowship

Research topic #3-31

1 Topic name	#3-31: Physics-Informed Machine Learning for Explainable and Generalizable Robot Control
ERC research field descriptor	9.5, 9.8. and 15.9
2 Link to topic / project page	https://cyber.felk.cvut.cz/vras
3 Short description of the topic	Robust machine control assumes modeling of robot-environment interactions. An example may include an outdoor autonomous ground robot that needs to be aware of its model and how the terrain will interact with it when a control sequence is executed. A flying robot may benefit from knowing the wind field ahead to model aerodynamic forces correctly. However, building robust perception systems that can efficiently adapt in a self-supervised manner to novel environments remains a significant challenge. We identify three core issues: (i) black-box models that ignore the robot's physical embodiment suffer from poor generalization, weak explainability, and limited transferability; (ii) sample-inefficient learning requires large volumes of annotated, domain-specific data; and (iii) complex architectures with tightly coupled components hinder modular adaptation. To address these limitations, we research a physics-guided machine learning framework that integrates physical knowledge with data-driven methods. Physical knowledge includes, among others, kinematics and the dynamics of the robot, terrain interaction and contact models, and environmental physics, such as wind. The physics can be incorporated in various ways. Two methods now researched most intensively are i) trainable machine learning pipelines may embed differentiable physical models, and ii) the learning process may be informed by constraining the predicted variable to obey physical laws; we can see it as physics-informed losses. We will seek new ways to embed the physics. Our approach aims to enable explainable, embodiment-aware, and probabilistically consistent adaptation from onboard sensory data via end-to-end differentiable architectures, enhancing robustness, efficiency, and generalization across diverse robotic platforms and environments. Group and supervision: Research will be conducted within the Vision and Robotics Group. The group has extensive experience with real robotics, such as successful participation in the DARPA SubT challenge (https://robotics.fel.cvut.cz/cras/darpa-subt/) and several state-of-the-art robotics platforms and sensors (https://robotics.fel.cvut.cz/cras/robots/). The Department has access to a high-performance computational cluster dedicated to artificial intelligence research and developments using traditional multi-CPU systems, but also GPUs.
4 Description of the ideal candidate	We seek highly motivated applicants with a PhD in robotics, AI, or related fields and a proven track record relevant to the topic - publications in top journals or conferences (e.g. computer vision (CVPR/ICCV/ECCV), machine learning (NeurIPS/ICML), or robotics (ICRA, IROS, RSS, CoRL; IEEE-TRO, IJRR).

Mentor

Karel Zimmermann	Faculty of Electrical Engineering	Control Engineering	zimmerk@fel.cvut.cz

Salary: CZK 75 000 per month
Application deadline: 15 February 2026
Start date: 01 March 2026

Applications and selection proces

To apply for the CTU Global Postdoc Fellowship you need the following documents in English:

- CV, including list of publications (max. 4 pages). At least three IF [1] journal publications or CORE A*/A conference paper are expected. Papers accepted for publication yet waiting to be prited do count if a proof of acceptance is provided.
- Motivation letter (max. 2 pages).
- PhD certificate (copy).
- Application for CTU Postdoc Fellowship Program – completed and signed.
- You may attach other documents supporting yor application such as recommendation letters etc.

Each research topic/proposal has a set deadline for submitting applications.

Please note that submissions should be sent to the contact address of the faculty/institute listed in the list of topics/positions.

Selection process:

- Applications will be assessed by the committee on the basis of the documents sent by the applicants. The mentor has a casting vote in the selection procedure.
- The interview will be arranged online.
- The starting date is indicated for each research topic/position.

1 Impact Factor. We follow the Web of Science Journal Citation Reports .