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UPWr Base of Knowledge - link:	https://bazawiedzy.upwr.edu.pl/info/author/UPWr4d682756bd1243c58f310f8e07f263af/
Researchgate:	https://www.researchgate.net/profile/Witold-Rohm
Personal website / Working group website:	https://spaceos.igig.upwr.edu.pl
Participation in projects in last 5 years (chronological; with distinction into PI (kierownik) and RF (wykonawca)):	EPOS – European Plate Observing System. Principal Investigator at UPWr: start date 01-09-2016, end date 31-12-2021, GNSS observation as a numerical weather prediction data source, a way forward to enhanced forecasts quality. Principal Investigator, start date 14-08-2014, end date 13-08-2018, finished, finally settled Commercialization of the result of the project: GNSS tomography as an important source of the meteorology data. Principal Investigator, start date 01-09-2015, end date 31-10-2019, Column water vapour content (PWAT) as a predictor of extreme weather events in Poland in the light of high resolution multi-source measurement data.Principal Investigator at UPWr, start date 27-04-2016, end date 26-04-2020, Three-dimensional integrated observations of the troposphere using ground-based and satellite GNSS observations. Principal Investigator at UPWr, start date 10-01-2021, end date 30-09-2025, in progress
PhD topic:	Enhancing GNSS atmosphere remote sensing capabilities with AI
Research discipline in Doctoral School:	Civil Engineering, Geodesy and Transport
Short description of the research problem to be solved in the PhD (minimum 1000 characters):	GNSS is a powerful technique that revolutionized the Positioning, Navigation and Timing (PNT), sectors. Today, all moving objects are equipped with GNSS sensors: satellites, planes, buses, trams, trains, taxis, bikes and almost all people are wearing smart watches or carrying smartphones. Until just recently the GNSS chips were built with only a handful of channels, one available system and a positioning based on the coarse code positioning. But things have changed, new chips are handling two or more frequencies from multiple constellations and are able to track the signal phase, just like the high-end precise receivers.
	All these ubiquitous GNSS sensors, not only provide essential services to the user with instenous positioning but also are capable of providing insightful data on the medium traversed by the signal - atmosphere. Given the fact that climate change has pushed the Earth System from the balance, turning our weather system into less predictable, all troposphere observations are of high value. One of the climate change mitigation practices is to improve the quality, availability and reliability of information concerning the state of the troposphere i.e.: convection, moisture dynamics, location and intensity of severe event information. The GNSS signals are transmitted towards Earth in a uniform, continuous way and devices that are able to track the signal are already acting as weather sensors.
	Currently researchers around the globe, in order to fully harness the power of GNSS signals, are developing break-through technologies to process GNSS data from moving objects to retrieve variable troposphere conditions. The number, quality and availability of data retrieved from moving and flying objects is growing constantly. However, without a successful filtration, selection and integration these data are not going to be useful for modern weather forecasts. Therefore a new operator based on modern Artificial Intelligence technology that uses GNSS derived observations has to be developed, tested and implemented in the most popular weather model to stimulate growth in this field. Within this PhD project, successful candidate will, using simulated and real data, develop innovative integration techniques able to ingest obtained GNSS remote sensing data into modern weather forecasting model.
Professional skills for PhD candidate (e.g. master program, specializations, softwares, language, analytical techniques, minimum 500 characters):	- Master of Science in Geodesy, Geoinformatics, Geography, Computer Science, Physics or Mathematics, -Experience in InSAR processing using open source (eg. SNAP) or commercial software (SARScape) -Fluent English in writing and speaking -Able to clearly present scientific concepts at the conferences, workshops and internal meetings, -Programming skills in Python, Matlab or R, -Keen to dig into complex scientific concepts related to InSAR processing, -Open for prolonged internships to external partners in and outside Europe
a) Project title:	none
b) Agreement number:	none
c) Number of months in the project to support PhD (in months; starting from 1st of October 2022):	0
Project website:	