

Name and surname:	Jan Kaplon
Academic Degree:	dr hab. inż. (DSc.)
Institute/Department:	Institute of Geodesy and Geoinformatics
e-mail address:	jan.kaplon@upwr.edu.pl
ORCID:	0000-0002-0068-0865
UPWr Base of Knowledge - link:	https://bazawiedzy.upwr.edu.pl/info/author/UPWrccd9641179ec4d43a94002927fd31f57?r=author&tab=&title=Profil%2Bosoby%2B%25E2%2580%2593%2BJan%2BKap%25C5%2582on%2B%25E2%2580%2593%2BUniwersytet%2BPrzyrodniczy%2Bwe%2BWroc%25C5%2582awiu&lang=pl
Researchgate:	https://www.researchgate.net/profile/Jan-Kaplon
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)):	<p>(RF) GATHERS - Integration of Geodetic and imAging TechNiques for monitoring and modelling the Earth's surface defoRmations and Seismic risk, (MSHE code): 857612, 1.12.2019 - 31.08.2024;</p> <p>(PI) EPOS - European Plate Observing System (EPOS-PL+), POIR.04.02.00-00-C005/19, 1.01.2020 - 31.12.2023;</p> <p>(RF) EPOS - European Plate observing System (EPOS-PL), POIR.04.02.00-14-A003/16-00, 19.01.2017 - 18.01.2022;</p> <p>(RF) A TOMographic Ionospheric Corrections testbed for Poland GNSS networks based on Wide Area Real Time Kinematic (ATOMIC-WARTK), ESA Contract No. 4000119662/17/NL/Cbi, 1.04.2017 - 31.03.2019.</p>
Do you plan to engage support of second supervisor or auxilliary supervisor?	YES
	Second supervisor (from other discipline, Polish or international research unit)
Name and surname:	Fabio Remondino
Academic Degree:	Dr.
Faculty, Institute/Department:	Bruno Kessler Foundation/3D Optical MEtrology unit
e-mail address:	remondino@fbk.eu
ORCID:	0000-0001-6097-5342
UPWr Base of Knowledge - link or most important publications from last 3 year (JCR) / patents from last 3 years (maximum 5):	<p>Motorcycle Detection and Collision Warning Using Monocular Images from a Vehicle Shabestari, Z.B., Hosseininaveh, A., Remondino, F. Remote Sensing, 2023, 15(23), 5548</p> <p>MIN3D Dataset: Multi-seNsor 3D Mapping with an Unmanned Ground Vehicle Trybała, P., Szrek, J., Remondino, F., ...Blachowski, J., Zimroz, R. PFG - Journal of Photogrammetry, Remote Sensing and Geoinformation Science, 2023, 91(6), pp. 425–442</p> <p>A survey on conventional and learning-based methods for multi-view stereo Stathopoulou, E.K., Remondino, F. Photogrammetric Record, 2023, 38(183), pp. 374–407</p> <p>Close-range photogrammetry reveals morphometric changes on replicative ground stones Sorrentino, G., Menna, F., Remondino, F., ...Re, A., Giudice, A.L. PLoS ONE, 2023, 18(8 AUGUST), e0289807</p> <p>Remondino, F., Karami, A., Yan, Z., ...Rigon, S., Qin, R. A Critical Analysis of NeRF-Based 3D Reconstruction. Remote Sensing, 2023, 15(14), 3585</p>
Researchgate:	
Personal website / Working group website:	https://3dom.fbk.eu/people/profile/remondino

Participation projects in last 5 years (chronological; with distinction into PI (kierownik) and RF (wykonawca)):	<ul style="list-style-type: none"> - TRACENET (Horizon EU UCPM, 2023-2024): technical coordinator - WildDrone (Horizon EU MSCA-DN, 2023-2026): PI for FBK, Industrial Exploitation Manager - 5Dculture (Horizon EU, 2023-2024): PI for FBK, WP leader - FEROX (Horizon EU, 2022-2025): PI for FBK, WP leader - USAGE (Horizon EU, 2022-2025): technical coordinator, WP leader - VOT3D (EIT-RM, 2022-2025): PI for FBK, WP leader - SEC4TD (EIT-RM, 2022-2025): PI for FBK, WP leader - InCube (Horizon EU, 2022-2025): PI for FBK - UPDATE (CARITRO, 2021-2023): coordinator - AMICOS (EIT-RM, 2020-2022): coordinator - TARGET-CE (Interreg-CE, 2020-2022): coordinator - TOTEM (CARITRO, 2019-2021): coordinator - VOLTA (EU MSCA RISE, 2017-2022): coordinator - AI4CH (MIUR-Israel, 2019-2021): PI for FBK - BOOSTEE-CE (Interreg-CE, 2017-2020): coordinator
PhD topic:	Fusion of visual- and GNSS-based positioning in challenging environments
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):	<p>Precise positioning is commonly associated with Global Navigation Satellite Systems (GNSS). However, in GNSS-denied environments, i.e. where GNSS signals are unavailable due to signal coverage, spoofing, or jamming, other concepts such as 5G, Signal of Opportunities or vision-based positioning supported by SLAM (Simultaneous Localization and Mapping) methods are considered. These alternative concepts have themselves challenges. For example, visual-based positioning suffers in case of lack of texture in the images, illumination changes, or weak network geometry.</p> <p>Currently, these concepts are being developed independently, as they are designed for different case scenarios. The integration of complementary positioning approaches and GNSS-based positioning has not been extensively explored. Knowing that each technique has its pros and cons, it is expected that a fusion of techniques will bring benefits, particularly in challenging environments, such as urban canyons, forests (under canopy), and road tunnels.</p> <p>Within this PhD project, the successful candidate will first tackle the positioning problem from various perspectives. After identifying the strengths and weaknesses of different techniques, the candidate is supposed to develop a fusion solution for GNSS and vision-based methods. This will be validated under both simulated (artificially degraded GNSS or visual signals) and real-time scenarios, considering availability and accuracy as the primary quality indicators.</p>
Professional skills for PhD candidate (e.g. master program, specializations, softwares, language, analytical techniques, minimum 500 characters):	<ul style="list-style-type: none"> - master of Science in Geodesy, Geoinformatics, Computer Science, Physics, Mathematics, or similar; - experience in GNSS data processing and/or photogrammetry; - good knowledge (or keen to learn) of least-squares adjustment, Kalman Filter, dynamic processes, and dynamic system estimation; - fluent English in writing and speaking (B2 level minimum); - ability to clearly present scientific concepts at conferences, workshops, and internal meetings; - programming skills (Python, C/C++, Matlab); - open for prolonged internships to external partner in Europe.
a) Project title:	The PhD candidate will be financially supported by Bruno Kessler Foundation, except of the Doctoral School scholarship.
b) Agreement number:	None
c) Number of months in the project to support PhD student (in months; starting from 1st of October 2024):	
Project website:	