

## Panu Srestasathiern

---

CONTACT INFORMATION	<p>Engineer (Professional level) THai Earth Observation System-2 (THEOS-2) project Geo-Informatics and Space Technology Development Agency (GISTDA) 120 The Government Complex, Building B, 6<sup>th</sup> – 7<sup>th</sup> floor, Chaeng Wattana Road, Lak Si, Bangkok 10210, THAILAND</p>	<p><i>Mobile:</i> +66-086-384-1033 <i>E-mail:</i> <a href="mailto:panu@gistda.or.th">panu@gistda.or.th</a></p>
RESEARCH INTERESTS	<p><b>Computer vision, and machine learning with applications in geo-informatics:</b> UAV mapping, 3D reconstruction from multiple images, object detection, image and data classification, change detection, spatial data analysis.</p>	
EDUCATION	<p>Ph.D., Geodetic Science, September 2012 The Ohio State University, Columbus, OH</p> <ul style="list-style-type: none"><li>• Dissertation Topic: <i>Line Based Estimation of Object Space Geometry and Camera Motion</i></li><li>• Adviser: Assistant professor Alper Yilmaz</li><li>• Area of Study: Digital photogrammetry</li></ul> <p>M.Sc., Geodetic Science, December 2008 The Ohio State University, Columbus, OH</p> <ul style="list-style-type: none"><li>• Thesis Topic: <i>View Invariant Planar-object Recognition</i></li><li>• Adviser: Assistant professor Alper Yilmaz</li><li>• Area of Study: Digital photogrammetry</li></ul> <p>B.Eng., Electrical and Computer Engineering, May 2004 Chulalongkorn University, Bangkok, Thailand</p> <ul style="list-style-type: none"><li>• Thesis Topic: <i>Finger print recognition</i></li><li>• Adviser: Dr. Suree Pumrin</li><li>• Area of Study: Digital signal processing</li></ul>	
AWARDS	<ul style="list-style-type: none"><li>• ESRI Award for best scientific paper in geographic information system (3<sup>rd</sup> place), ASPRS Annual Conference and International Lidar Mapping Forum, Denver, Colorado, 2018.</li><li>• Royal Thai government scholarship, 2006-1012</li></ul>	
RESEARCH PROJECTS	<p>Deep learning for remote sensing:</p> <ul style="list-style-type: none"><li>• Land cover classification.</li></ul> <p>Machine learning for remote sensing applications:</p> <ul style="list-style-type: none"><li>• Socio-economic analysis using remote sensing data</li><li>• Plantation area segmentation e.g., rice paddy fields, orchards, pineapples or oil palm trees</li><li>• Rice age or growing state estimation</li><li>• Forest area delineation</li><li>• Deforestation detection</li><li>• Tree counting, and mass estimation.</li></ul> <p>UAV for mapping applications:</p> <ul style="list-style-type: none"><li>• UAV for agricultural applications</li></ul>	

- Geo-referencing method for data obtained from sensors equipped on UAV such as video and laser scanner

GNSS-based meteorology and numerical weather modeling:

- GNSS signal analysis for troposphere monitoring
- GNSS meteorology applications in disaster i.e., flash flood early warning
- The inter-calibration between meteorological satellites and ground sensors

Underwater panoramic camera system:

- Estimating the mounting angle between cameras attached to the housing
- Multi-head camera image stitching

Near-shore wave's height estimation using video:

- Bathymetry and near-shore wave height estimation from video data.

COURSE TAUGHT

- Satellite image processing
- Terrain analysis
- UAV photogrammetry

EXPERTISES

Mathematics:

- Applied mathematics, differential geometry, projective geometry, linear algebra and numerical method

Computer Vision and Image Processing:

- Multiple view geometry, 3D reconstruction, linear and non-linear filtering, camera calibration, image understanding, segmentation, image formation, spectral method and machine learning

Mapping Sciences:

- Map projection, data adjustment, analytical and digital photogrammetry, laser scanning

SOFTWARE SKILLS

Computer Programming:

- R, C++, Python, MATLAB®

MATLAB® skill set:

- Linear algebra, Fourier transforms, optimization, nonlinear numerical methods, statistics, visualization
- Toolboxes: signal processing, image processing, optimization, symbolic math

Desktop Editing and Productivity Software:

- T<sub>E</sub>X (L<sup>A</sup>T<sub>E</sub>X, B<sup>B</sup>T<sub>E</sub>X),
- Microsoft Office, OpenOffice.org,
- InkScape

Operating Systems:

- Microsoft Windows family, Apple OS X, Linux

JOURNAL PUBLICATION

[1] T. Panboonyuen, K. Jitkajornwanich, S. Lawawirojwong, P. Srestasathien, P. Vateekul, Semantic Labeling in Remote Sensing Corpora Using Feature Fusion-Based Enhanced Global Convolutional Network with High-Resolution Representations and Depthwise Atrous Convolution. *Remote Sens.* 12(8), 2020.

[2] T. Panboonyuen, K. Jitkajornwanich, S. Lawawirojwong, P. Srestasathien, and P. Vateekul, Semantic Segmentation on Remotely Sensed Images Using an Enhanced Global Convolutional Network with Channel Attention and Domain Specific Transfer Learning. *Remote Sens.* 11(1), 83, 2019.

- [3] G. Barsai, A. Yilmaz, S. Nagarajan, and P. Srestasathiern, Registration of Images To Lidar and GIS Data Without Establishing Explicit Correspondences, *Photogrammetric Engineering & Remote Sensing.*, 83 (10), 705-716, 2017.
- [4] T. Panboonyuen, K. Jitkajornwanich, S. Lawawirojwong, P. Srestasathiern and P. Vateekul, Road Segmentation of Remotely-Sensed Images Using Deep Convolutional Neural Networks with Landscape Metrics and Conditional Random Fields, *Remote Sens.*, 9(7), 2017.
- [5] C. Kitpracha, D. Promchot, P. Srestasathiern and C. Satirapod, Precise Tropospheric Delay Map of Thailand using GNSS Precise Point Positioning Technique, *Int. J. Geoinformatics*, 13(2), June, 2017.
- [6] R. Suwantong, P. Srestasathiern, C. Satirapod, S. Chuang and C. Kitpracha, Mean Atmospheric Temperature Model Estimation for GNSS Meteorology Using AIRS and AMSU Data, *Engineering and Applied Science Research*, 44(1), 46-52, 2017.
- [7] P. Srestasathiern and P. Rakwatin, Oil Palm Tree Detection with High Resolution Multi-Spectral Satellite Imagery, *Remote Sens.*, 6, 9749-9774, 2014.
- [8] P. Srestasathiern and A. Yilmaz, Planar shape representation and matching under projective transformation. *Comput. Vis. Image Underst.*, 115(11):1525-1535, November 2011.
- BOOK CHAPTER      [9] P. Srestasathiern, Geometric camera calibration in support of GIS, *Encyclopedia of GIS*, 2016.
- CONFERENCE  
PUBLICATION      [10] N. Thongniran, K. Jitkajornwanich, S. Lawawirojwong, P. Srestasathiern, P. Vateekul, Combining Attentional CNN and GRU Networks for Ocean Current Prediction based on HF Radar Observations, *8<sup>th</sup> International Conference on Computing and Pattern Recognition*, 2019.
- [11] N. Thongniran, P. Vateekul, K. Jitkajornwanich, S. Lawawirojwong, P. Srestasathiern, Spatio-Temporal Deep Learning for Ocean Current Prediction Based on HF Radar Data, *16<sup>th</sup> International Joint Conference on Computer Science and Software Engineering (JCSSE)*, 2019.
- [12] K. Jitkajornwanich, C. Kongthong, N. Khongsoontornjaroen, J. Kaiyasuan, S. Lawawirojwong, P. Srestasathiern, S. Srisonphan, and P. Vateekul, Utilizing Twitter Data for Early Flood Warning in Thailand, *IEEE International Conference on Big Data (Big Data)*, 2018.
- [13] S. Moukomla, P. Srestasathiern, S. Siripon, R. Wasuhiranyritha and P. Kootha, Estimating above ground biomass for eucalyptus plantation using data from unmanned aerial vehicle imagery, *Remote Sensing for Agriculture, Ecosystems, and Hydrology XX*, 2018.
- [14] S. Chantharaj, K. Pornratthanapong, P. Chitsinphayakun, T. Panboonyuen, P. Vateekul, S. Lawawirojwong, P. Srestasathiern and K. Jitkajornwanich, Semantic Segmentation On Medium-Resolution Satellite Images Using Deep Convolutional Networks With Remote Sensing Derived Indices, *15<sup>th</sup> International Joint Conference on Computer Science and Software Engineering (JCSSE)*, 2018.
- [15] T. Santitewagun, P. Srestasathiern, P. Tulsuk, M. Ruchanurucks, T. Phatrapornnant and S. Hasegawa, Robust regression in extrinsic calibration between camera and single line scan laser rangefinder, *The International Conference of Information and Communication Technology for Embedded Systems*, 2017.

- [16] C. Sukawattanaavit, and P. Srestasathiern, Object-based land cover classification based on fusion of multifrequency SAR data and THAICHOTE optical imagery, *Remote Sensing for Agriculture, Ecosystems, and Hydrology XIX*, 2017.
- [17] R. Suwantong, C. Satirapod, P. Srestasathiern and C. Kitpracha, Deriving the mean tropospheric temperature model using AIRS and AMSU for GNSS precipitable water vapour estimation, *ION+ GNSS*, 2016.
- [18] R. Suwantong, P. Srestasathiern, C. Satirapod, S. Chuang and C. Kitpracha, Mean atmospheric temperature model estimation for GNSS meteorology using AIRS and AMSU data, *6<sup>th</sup> KKU International Engineering Conference*, 2016.
- [19] R. Suwantong, P. Srestasathiern, S. Lawawirojwong, and P. Rakwatin, Moving horizon estimator with pre-Estimation for crop start date estimation in tropical area, *2016 American Control Conference (ACC)*, 2016.
- [20] P. Srestasathiern, S. Lawawirojwong, R. Suwantong and P. Phuthong, Rotation matrix sampling scheme for multidimensional probability distribution transfer, *ISPRS Annals of Photogrammetry, Remote Sensing and Spatial Information Sciences*, 2016.
- [21] P. Srestasathiern, S. Lawawirojwong and R. Suwantong, Support vector regression for rice age estimation using satellite imagery, *13<sup>th</sup> international conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI-CON)*, 2016.
- [22] R. Suwantong, P. Srestasathiern, S. Lawawirojwong and P. Rakwatin, Accurate crop cultivation date estimation from MODIS using NDVI phases and extended Kalman filter, *13<sup>th</sup> international conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI-CON)*, 2016.
- [23] T. Intarat, P. Rakwatin, P. Srestasathiern, P. Triwong, C. Tangsiriworakul and S. Noivun, Potential of sugar cane monitoring using synthetic aperture radar in central Thailand, *Asian Conference on Remote Sensing (ACRS)*, October, 2015.
- [24] P. Srestasathiern, S. Lawawirojwong, N. Soontranon and P. Rakwatin, Unsuper-vised ensemble change detection using kernel PCA, *Asian Conference on Remote Sensing (ACRS)*, October, 2015.
- [25] R. Suwantong, P. Srestasathiern, P. Rakwatin and S. Suwannachatkul, Tuning the extended Kalman filter for rice cultivation date estimation in tropical area using MODIS NDVI data, *Asian Conference on Remote Sensing (ACRS)*, October, 2015.
- [26] N. Soontranon, S. Lawawirojwong, K. Jitkajornwanich, P. Srestasathiern and P. Rakwatin, A comparison of ground and satellite based phenologies for monitoring rice field, *Asian Conference on Remote Sensing (ACRS)*, October, 2015.
- [27] N. Soontranon, S. Lawawirojwong, P. Tangpattanakul, P. Srestasathiern and P. Rakwatin, Comparative results of phenology obtained from satellite and ground observation images on paddy field, *Applied Mechanics and Materials*, 2015.
- [28] N. Soontranon, P. Srestasathiern and P. Rakwatin, Rice crop calendar based on phenology analysis from time-series images, *12<sup>th</sup> international conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI-CON)*, 2015.

- [29] P. Phuthong, C. Lertsudwichai and P. Srestasathiern, Index generation for satellite image retrieval, *12<sup>th</sup> international conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI-CON)*, 2015.
- [30] P. Rakwatin, S. Suwannachatkul, N. Soontranon, S. Lawavirojwong, P. Tangpattanakul and P. Srestasathiern, A comparison of RADARSAT-2 and MODIS vegetation indices for rice crop, *International Symposium on Remote Sensing (ISRS)*, 2015
- [31] N. Soontranon, P. Srestasathiern and S. Lawavirojwong, 3D Modeling from Multi-views Images for Cultural Heritage in Wat-Pho, Thailand, - The International Archives of Photogrammetry, Remote Sensing and Spatial Information Sciences, Volume 40, Issue 5, 2015.
- [32] P. Tulsuk, P. Srestasathiern, M. Ruchanurucks, T. Phatrapornnant and H. Nagahashi, A Novel Method for Extrinsic Parameters Estimation between Single-Line Scan LiDAR and Camera, *IEEE Intelligent Vehicles Symposium*, 2014
- [33] P. Srestasathiern, N. Soontranon and P. Rakwatin, Rice field monitoring using intrinsic image decomposed from field server imagery, *Asian Conference on Remote Sensing (ACRS)*, 2014.
- [34] N. Soontranon, P. Srestasathiern and P. Rakwatin, Rice crop phenology using texture analysis on time-series images obtained from still camera, *Asian Conference on Remote Sensing (ACRS)*, 2014.
- [35] P. Srestasathiern and N. Soontranon, A novel camera calibration method for fish-eye lenses using line features, *ISPRS-Photogrammetric Computer Vision (PCV)*, 2014
- [36] N. Soontranon, P. Tangpattanakul and P. Srestasathiern and P. Rakwatin, An agricultural monitoring system: Field server data collection and analysis on paddy field, *14<sup>th</sup> International Symposium on Communications and Information Technologies (ISCIT)*, 2014
- [37] N. Soontranon, P. Srestasathiern and P. Rakwatin, Rice Growing Stage Monitoring in Small-scale Region Using ExG Vegetation Index, *11<sup>th</sup> international Conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI-CON)*, 2014
- [38] P. Tulsuk, M. Ruchanurucks and P. Srestasathiern, Feature extraction of line-scan LiDAR for calibrating camera and LiDAR, *The International Conference of Information and Communication Technology for Embedded Systems*, 2014
- [39] P. Srestasathiern and P. Rakwatin., A method for oil palm tree counting, *Asian Conference on Remote Sensing (ACRS)*, 2013
- [40] P. Srestasathiern and A. Yilmaz. View Invariant Object Recognition. In: *IAPR International Conf. on Pattern Recognition (ICPR)*, December, 2008.
- [41] P. Srestasathiern. *Line Based Estimation of Object Space Geometry and Camera Motion*. PhD Dissertation, The Ohio State University, Columbus, OH, 2012.
- [42] P. Srestasathiern. *View Invariant Planar-object Recognition*. Master's thesis, The Ohio State University, Columbus, OH, 2008.

OTHER  
PUBLICATIONS

REFERENCES  
AVAILABLE TO  
CONTACT

**Dr. Anond Snidvongs (Executive director)**  
**Anusorn Rungsipanich (Acting rector of GISTDA Academy)**  
Geo-Informatics and Space Technology Development Agency  
120 The Government Complex, Building B,  
Chaeng Wattana Road, Lak Si,  
Bangkok 10210, THAILAND