Application for Hosting Technical Commission V (Education and Outreach)
2016-2020

Name of Ordinary Member making the application:
Chinese Taipei Society of Photogrammetry and Remote Sensing (CTSPRS)

Name of the proposed Technical Commission President (TCP) and Vice-President:
TCP: Dr. Fuan Tsai
VP: Dr. Rakesh Malhotra (supported by the American Society for Photogrammetry and Remote
    Sensing)

Provisional plan for financial and management arrangements:
The financial and management is planned to be arranged mainly by CTSPRS and with support from
National Central University of Taiwan.
Joint meeting travel cost: $3,300/year; Mid-term Symposium 2018: $30,000.

Provisional plan for technical meetings:
- The mid-term symposium is planned to be organized jointly with an appropriate
  international conference or with the annual Surveying and Geoinformatics Conference of
  Taiwan in 2018. The venue is planned to be at National Central University, Zhongli,
  Taoyuan, Taiwan.
- Each working group is encouraged to organize at least one workshop or symposium during
  the four years period.
- Continue to support ISPRS Student Consortium Summer School.

Application endorsed by

Prof. Peter Tian-Yuan Shih
President, Chinese Taipei Society of Photogrammetry and Remote Sensing
First submission: March 13, 2016
This submission: April 27, 2016

April 13, 2016

Professor Chen Jun, President
International Society for Photogrammetry and Remote Sensing (ISPRS)
Via email: chenjun@nsdi.gov.cn, chenjun_isprs@263.net, isprs-sg@ipi.uni-hannover.de

Dear Professor Chen,

This letter is submitted in support of the nomination of Dr. Rakesh Malhotra, Fayetteville State University, North Carolina, USA, for Vice-President of Commission V (Education and Outreach) for the 2016-2020 term. Dr. Malhotra will partner with Dr. Fuan Tsai, who has been nominated by the Chinese Taipei Society of Photogrammetry and Remote Sensing (CTSPRS) as a candidate for Commission-V President, to contribute to the education, outreach and promotion of photogrammetry, remote sensing and spatial information sciences. Dr. Malhotra has been an active member of ASPRS since 2005 and has contributed to ISPRS and ASPRS as highlighted:

- Organized the 2010 ISPRS Student Consortium Summer School in Fayetteville, NC in Summer 2010. This event was attended by about 60 students from over 19 countries from around the world.
- Served as the Co-Chair of ISPRS Working Group VI/5 from 2012-2016. In this capacity, he helped the Chair (Dr. Fuan Tsai) and participated in meetings with the Student Consortium.
- Served as the student volunteer coordinator for ASPRS since 2008. In this capacity he organizes and manages students who attend and participate in the ASPRS annual conferences. Students contribute to conference management while receiving complimentary registration for the event.

Rakesh Malhotra is an Assistant Professor of Geography and the coordinator for the Geography Program at FSU. He established a GIS/remote sensing lab with external funding which was recently designated as the USGS/NGA Center for Academic Excellence. He is an excellent candidate who has worked on student and education related issues within and outside ASPRS and ISPRS for over 10 years. His CV is included along with this letter.

Please let me know if you need additional information to support Dr. Malhotra's nomination.

Sincerely,

Michael Hauck

Michael Hauck, Executive Director

cc (via email):
        Dr. Charles Toth, ASPRS President
        ASPRS Board of Directors
        ISPRS Council

Academic Curriculum Vitae

Fuan Tsai
Professor
Center for Space and Remote Sensing Research
National Central University
Zhong-Li, Taoyuan 320, Taiwan ROC
Tel: + 886-3-4227151-ext.7619
Fax: + 886-3-4254908
E-mail : ftsai@csrsr .ncu.edu.tw

Education:

Ph.D. (2000): Civil & Environmental Engineering/Remote Sensing, Cornell University, Ithaca, NY, USA.

M.S. (1995): Civil & Environmental Engineering/Remote Sensing, Cornell University, Ithaca, NY, USA.

B.S. (1989): Civil Engineering, National Taiwan University, Taipei, Taiwan.

Experiences:

08/2014 – present: Professor, Center for Space and Remote Sensing Research, National Central University, Taiwan

08/2012 – present: Chair, Working Group VI-5 of the International Society for Photogrammetry and Remote Sensing (ISPRS WG-VI/5)

08/2007 – 07/2014: Associate Professor, Center for Space and Remote Sensing Research, National Central University, Taiwan

08/2002 – 07/2007: Assistant Professor, Center for Space and Remote Sensing Research, National Central University, Taiwan

07/2000 – 07/2002: Postdoctoral Research Associate, Los Alamos National Laboratory, Los Alamos, NM, USA

02/2000 – 07/2000: Consultant, Cornell Institute for Resource Information Systems, Ithaca, NY, USA

11/1998 – 02/2000: Research Assistant, Cornell University, Ithaca, NY USA

01/1997 – 10/1998: Graduate Research Assistant, Los Alamos National Laboratory, Los Alamos, NM, USA

10/1993 – 12/1996: Research Assistant, Cornell University, Ithaca, NY USA

06/1991 – 07/1993: Civil Design Engineer, Gibson Engineers, Ltd., Taipei, Taiwan.

Areas of Interest and Specialization:

Remote Sensing Image Analysis; 3D Reconstruction; Multi-dimensional Spatial Analysis; Digital City Modeling; Geovisualization

Awards:

Best Paper Award: Journal of Photogrammetry and Remote Sensing, 2014 & 2015

JSPRS Best Paper Award: 30th Asian Conference on Remote Sensing, 2009.

Excellent Young Scholar Research Grant Award, National Science Council, 2007—2010.

Excellence in Teaching Award: College of Engineering, National Central University, 2006.

Student Paper Awards:
- 35th Asian Conference on Remote Sensing (ACRS2014), 2014.
- 9th International Symposium on Remote Sensing (ISRS2013), 2013.
- 32nd Taiwan Surveying and Geoinformatics Conference, 2013.
- 6th Across Taiwan Strait Remote Sensing Conference, 2013.
- 8th International Symposium on Remote Sensing (ISRS2012), 2012.
- 5th Across Taiwan Strait Remote Sensing Conference, 2010.
- 6th International Symposium on Remote Sensing (ISRS2010), 2010.
- 30th Asian Conference on Remote Sensing (ACRS2009), 2009.
- 28th Taiwan Surveying and Geoinformatics Conference, 2009.

Professional Societies:
- Chinese (Taipei) Society of Photogrammetry and Remote Sensing
- IEEE Geosciences and Remote Sensing
- SPIE
- American Geophysical Union

Activities (2011-):
- Chair, ISPRS WG-VI/5, 2012-2016.
- Advisor, AARS Student Group, 2014-present.
- Trustee, Chinese Taipei Society of Photogrammetry and Remote Sensing, 2014- present.
- Academic Committee, Chinese Taipei Society of Photogrammetry and Remote Sensing, 2009-present.
- Organizing Committee, 2016 International Symposium on Remote Sensing (ISRS2016), Jeju, Korea.
- Executive Guest Editor: Terrestrial, Atmospheric and Oceanic Sciences (TAO), 2015.
- Organizer: 13th SPRS Student Consortium and WG VI/5 Summer School, Diliman, Quezon City, Philippines, Oct. 2015.
- Organizer: 2015 Taiwan-Japan Workshop on Application of Remote Sensing for Environmental Monitoring and Hazard Management, Jan. 2015.
- Organizer: 11th ISPRS Student Consortium and WG VI/5 Summer School, Nay Pyi Taw, Myanmar, Oct. 2014.
- Keynote: Annual Conference of Architecture and Building Research Institute, MOI, Taipei, Taiwan, May 2014.
- Keynote: Smart Cadastre and Smart City Workshop, Kaohsiung, Taiwan, Dec. 2013.
- Organizer: 9th ISPRS Student Consortium and WG VI/5 Summer School, Bali, Indonesia, Oct. 2013.
- Academic Committee: 34th Asian Conference on Remote Sensing (ACRS2013), Bali, Indonesia, Oct. 2013.
- Technical Committee: 9th International Symposium on Remote Sensing, 2013.
- Co-Chair: Technical Program Organizing Committee, 2013 International Symposium on Mobile Mapping Technology (MMT2013), 2013.
- Technical and Organizing Committees: 2013 Across Taiwan Strait Remote Sensing Conference, 2013.
- Organizer: 8th ISPRS Student Consortium and WG VI/5 Summer School,

Pattaya, Thailand, Nov. 2012.
- Technical Committee: 8th International Symposium on Remote Sensing, 2012.
- Organizer: 7th ISPRS Student Consortium and WG VI/5 Summer School, Zhongli, Taiwan, Oct. 2012.
- Technical and Organizing Committees: 32nd Asian Conference on Remote Sensing (ACRS2011), 2011.
- Academic Committee: 2011 Across Taiwan Strait Remote Sensing Conference, 2011.

Selected Publications:

Refereed Papers:

Tsai*, F., J-S Lai and Y-H Lu, 2016. "Land-Cover Classification of Full-Waveform LiDAR Point Cloud with Volumetric Texture Measures", Terrestrial, Atmospheric and Oceanic Sciences, accepted. (SCI)

Chiou*, Y-S and F. Tsai, 2015. "A Positioning Scheme Using Inertial Sensing for Indoor and Outdoor Environments", Sensors and Materials, 27:8, pp. 719-726. (SCI)

Tsai*, F., T-S Wu, I-C Lee, H. Chang and A. Y-S Su, 2015. "Reconstruction of Indoor Models Using Point Clouds Generated from Single-Lens Reflex Cameras and Depth Images", International Archives of Photogrammetry, Remote Sensing and Spatial Information Sciences, 40:4/W5, pp. 99-102.

Chen*, W. W., Z-P Shen , J-A Wang and F. Tsai, 2015. "Scripting STABL with PSO for Analysis of Slope Stability", Neurocomputing, 148:19, pp. 167-174. (SCI)

Yoshino*, K., S. Kawaguchi, F. Kanda, K. Kushida and F. Tsai, 2014. "Very High Resolution Plant Mapping in High Moor, Kushiro Wetland", Photogrammetric Engineering & Remote Sensing, 80:9, pp. 895-905. (SCI)

Chiou, Y-S and F. Tsai*, 2014. "A reduced-complexity data-fusion algorithm using belief propagation for location tracking in heterogeneous environments", IEEE Transactions on Cybernetics, 44:6, pp. 922-935. (SCI)

Tsai*, F., H. Chang and A. Y. S. Su, 2014. "Combining MEMS-based IMU data and vision-based trajectory estimation", International Archives of Photogrammetry, Remote Sensing and Spatial Information Sciences, 40:4, pp. 267-271.

蔡富安 * 、張智安、張桓、陳良健、陳杰宗, 2013. "多尺度三維數位房屋模型建置", 航測及遙測學刊, 17:4, pp. 267-285. (中華民國航空測量及遙感探測學會年度論文獎)

Tsai*, F., J-S Lai, W. W. Chen and T-H Lin, 2013. Analysis of Topographic and Vegetative Factors with Data Mining for Landslide Verification", Ecological Engineering, vol. 61-C, pp. 669-677. (SCI)

Wang, C-L, Y-S Chiou* and F. Tsai, 2013, "Reduced-complexity tracking scheme based on adaptive weighting for location estimation", IET Communications, vol. 7 no. 7, pp. 673-684. (SCI)

Tsai*, F. and J-S Lai, 2013, "Feature Extraction of Hyperspectral Image Cubes Using Three-dimensional Gray Level Co-occurrence", IEEE Transactions on Geoscience and Remote Sensing, vol. 51, no. 6, pp. 3504-3513. (SCI)

Tsai, F., Y-S Chiou* and H. Chang, 2013, "A Positioning Scheme Combining

Location Tracking with Vision Assisting for Wireless Sensor Networks", Journal of Applied Research and Technology, vol. 11, no. 2, pp. 292-300. (SCI)

Chiou*, Y-S, F. Tsai, S-C Yeh, and W-H Hsu, 2012, "An IMU-based positioning system using QR-code assisting for indoor navigation", Lecture Notes in Electrical Engineering, vol. 203, pp. 655-665. (EI)

蔡富安*, 2012, "遙測資料三維紋理分析", 工程科技通訊, vol. 128, pp. 272-276.

Chiou, Y-S, F. Tsai*, C-L Wang and C-T Huang, 2012, "A reduced-complexity scheme using message passing for location tracking", EURASIP Journal on Advances in Signal Processing, 2012:121, doi:10.1186/1687-6180-2012-121. (SCI)

Tsai*, F., Y-S Chiou and H. Chang, 2012, "A location tracking testbed using vision-assisted scheme for wireless senor networks", International Archive of Photogrammetry, Remote Sensing and Spatial Information Sciences, 39(B1), pp. 503-508.

Lai, J-S and F. Tsai*, 2012, "Verification and risk assessment for landslides in Shimen Reservoir watershed of Taiwan using spatial analysis and data mining", International Archive of Photogrammetry, Remote Sensing and Spatial Information Sciences, 39(B2), pp. 67-70.

Chang, H. and F. Tsai*, 2012, "Reconstructing three-dimensional specific curve building models from a single perspective view image", International Archive of Photogrammetry, Remote Sensing and Spatial Information Sciences, 39(B6), pp. 101-106.

Tsai*, F., W.J. Lin and L.C. Chen, 2012. "Multi-resolution representation of digital terrain and building models", in Advances in Geo-Spatial Information Science, by W. Shi, M. Goodchild, B. Lees & Y. Leung (Edts.), ISPRS Book Series, Vol. 10, pp. 233-242.

Tsai*, F., T-H Lin, L-C Chen and W. W. Chen, 2011, "Landslide detection and monitoring using remote sensing and spatial analysis in Taiwan", Proceedings of SPIE, Vol. 8181, pp. 81810V-1-8. (EI)

Lin*, T-H, P. Yang, G-R Liu, F. Tsai, 2011, "To analyze the effect of mixing with soot aggregates on retrieving dust properties for satellite observations in Asia", Proceedings of SPIE, Vol. 8177, pp. 81770L-1-11. (EI)

蔡富安*、陳良健, 2011, "空間資訊整合：三維數位城市建置與應用之挑戰與展望", 土木水利, 38:2, pp. 90-98.

Tsai*, F., J-H Hwang, L-C Chen and T-H Lin, 2010, "Post-Disaster Assessment of Landslides in Southern Taiwan after 2009 Typhoon Morakot Using Remote Sensing and Spatial Analysis", Natural Hazards and Earth System Sciences, 10(10), pp. 2179-2190. (SCI)

蔡富安*、陳良健, 2010, "三維數位城市之建置及應用", 國土資訊系統通訊, 73, pp. 18-30.

賴哲儻、蔡富安*, 2009, "高光譜影像立方體於特徵空間之三維紋理計算", 航測及遙測學刊, 14(4), pp. 303-316.

Chang, H. and F. Tsai*, 2009, "3D Building Model Construction from A Single Image", Asian Journal of Geoinformatics, 9(4), pp. 41-44.

Tsai*, F. and W. W. Chen, 2008, "Striping Noise Detection and Correction of Remote Sensing Images", IEEE Trans. Geoscience Remote Sensing, 46(12), pp. 4122-4131. (SCI)

Tsai*, F., C-K Chang, J-Y Rau, T-H Lin, G-R Liu, 2007, "3D Computation of Gray Level Co-Occurrence in Hyperspectral Image Cubes", Lecture Notes in

Computer Science, vol. 4676, pp. 429-440. (SCI)

蔡富安*，林后駿，陳正軒, 2007, "以視訊影像製作及敷貼建物模型牆面紋理", 航測及遙測學刊, 12(1), pp. 83-92,

蔡富安*、林恩楷, 2007, "利用高光譜影像偵測外來植物—以恆春地區銀合歡為例", 科儀新知, 29(3), pp. 14-20.

Tsai*, F. and H-C Lin, 2007, "Polygon-based Texture Mapping for Cyber City 3D Building Models", International Journal of Geographical Information Science, 21(9), pp. 965-981. (SCI)

Tsai*, F., E-K Lin and K. Yoshino, 2007, "Spectrally Segmented Principal Component Analysis of Hyperspectral Imagery for Mapping Invasive Plant Species", International Journal of Remote Sensing, 28(5-6), pp. 1023-1039. (SCI)

Rau, J-Y, T-A Teo, L-C Chen, F. Tsai, K-H Hsiao and W-C Hsu, 2006, "Integration of GIS, GPS and Photogrammetry for Texture Mapping in Photo-Realistic City Modeling", Lecture Notes in Computer Science, vol. 4319, pp. 1283-1292. (SCI)

Rau*, J-Y, L-C Chen, F. Tsai, K-H Hsiao and W-C Hsu, 2006, "LOD Generation for 3D Polyhedral Building Model", Lecture Notes in Computer Science, vol. 4319, pp. 44-53. (SCI)

Tsai*, F. & M-J Chou, 2006, "Texture Augmented Analysis of High Resolution Satellite Imagery in Detecting Invasive Plant Species", Journal of the Chinese Institute of Engineers (JCIE), 29(4), pp. 581-592. (SCI)

Laba*, M., F. Tsai, D. Ogurcak, S. Smith, M.E. Richmond, 2005, "Field Determination of Optimal Dates for the Discrimination of Invasive Wetland Plant Species using Derivative Spectral Analysis", Photogrammetric Engineering & Remote Sensing, 71(5), pp. 603-611. (SCI)

Tsai*, F., H-C Lin, J-K Liu, K-H Hsiao, 2005, "Semiautomatic Texture Generation and Transformation for Cyber City Building Models", IEEE International Geoscience & Remote Sensing Symposium (IGARSS), vol. 7, pp. 4980-4983. (EI)

Tsai*, F., M-J Chou, H-H Wang, 2005, "Texture Analysis of High Resolution Satellite Imagery for Mapping Invasive Plants", IEEE International Geoscience & Remote Sensing Symposium (IGARSS), vol. 4, pp. 3024-3027. (EI)

Tsai*, F., E-K Lin, H-H Wang, 2005, "Detecting Invasive Plant Species Using Hyperspectral Satellite Imagery", IEEE International Geoscience & Remote Sensing Symposium (IGARSS), vol. 4, pp. 3002-3005. (EI)

Tsai*, F. & W. D. Philpot, 2002, "A Derivative-Aided Hyperspectral Image Analysis System for Land-Cover Classification", IEEE International Transactions on Geoscience and Remote Sensing, 40:2, pp. 416-425. (SCI)

Tsai*, F. & W. Philpot, 1998, "Derivative Analysis of Hyperspectral Data", Remote Sensing of Environment, 66:1, pp. 41-51. (SCI)

Conference and Other Papers:

Tsai*, F., J-S Lai and Y-C Liu, 2015. "An Alternative Open Source Web-based 3D GIS: Cesium Engine Environment", 36th Asian Conference on Remote Sensing (ACRS2015), Oct. 19-23, Manila, Philippines.

Lai, J-S and F. Tsai*, 2015. "Integration of Decision Tree and Fuzzy Rule Induction on Landslide Susceptibility Modeling", 36th Asian Conference on Remote Sensing, Oct. 19-23, Manila, Philippines. 36th Asian Conference on Remote Sensing (ACRS2015), Oct. 19-23, Manila, Philippines.

Lin, T-C, J-S Lai, F. Tsai* and T-H Lin, 2015. "Topographic Correction of NDVI in Mountainous Regions", 36th Asian Conference on Remote Sensing (ACRS2015), Oct. 19-23, Manila, Philippines.

Wu, T-S and F. Tsai*, 2015. "Integration of RGB-D Sensor and DSLR Camera for Indoor 3D Model Generation", 36th Asian Conference on Remote Sensing (ACRS2015), Oct. 19-23, Manila, Philippines.

Lee, I-C and F. Tsai*, 2015. "Applications of Panoramic Images: From 720° Panorama to Interior 3D Models of Augmented Reality", ISPRS WG IV/7 and WG V/4 Joint Workshop on Indoor-Outdoor Seamless Modelling, Mapping and Navigation, May 21-22, Tokyo, Japan.

Tsai*, F., J-S Lai and Y-H Lu, 2015. "Full-waveform LiDAR Point Cloud Classification with Volumetric Texture Measures for Land-Cover Identification", International Symposium on Remote Sensing (ISRS2015), Apr. 22-24, Tainan, Taiwan.

Wu, J-S and F. Tsai*, 2015. "Indoor Mapping Based on RGB-D and DSLR Cameras", International Symposium on Remote Sensing (ISRS2015), Apr. 22-24, Tainan, Taiwan.

Lee, I-C and F. Tsai, 2015. "Orientation Parameters Estimation of Panoramic Close-Range Photogrammetry Images", International Symposium on Remote Sensing (ISRS2015), Apr. 22-24, Tainan, Taiwan.

Lin, T-C and F. Tsai*, 2015. "3D Indoor Model Reconstruction Using Panorama Equipment", International Symposium on Remote Sensing (ISRS2015), Apr. 22-24, Tainan, Taiwan.

Tsai*, F. and Y-C Liu, 2014. "1. Multi-temporal Virtual 3D Campus Integrated with Historic GIS Data", 35th Asian Conference on Remote Sensing (ACRS2014), 27-31 Oct., Nay Pyi Taw, Myanmar.

Wu, T-S and F. Tsai*, 2014. "2. Indoor Mapping Based on RGB-D And DSLR Cameras", 35th Asian Conference on Remote Sensing (ACRS2014), 27-31 Oct., Nay Pyi Taw, Myanmar. (Best Student Paper Award)

Lin, T-C and F. Tsai, 2014. "3. 3D Indoor Model Reconstruction Using A Panorama Equipment", 35th Asian Conference on Remote Sensing (ACRS2014), 27-31 Oct., Nay Pyi Taw, Myanmar.

Lai, J-S and F. Tsai, 2014. "4. Application of Swarm Intelligence for Landslide Susceptibility Modeling from Geospatial Data Fusion", 35th Asian Conference on Remote Sensing (ACRS2014), 27-31 Oct., Nay Pyi Taw, Myanmar.

Tsai*, F. and H. Chang, 2014. "Evaluations of Three-dimensional Building Model Reconstruction from LiDAR Point Clouds and Single-View Perspective Imagery". ISPRS Technical Commission V Symposium, 23-26, June, Riva del Garda, Italy.

Tsai*, F. and L-C Chen, 2014. "Challenges of Remote Sensing and Spatial Information Education and Technology Transfer in a Fast Developing Industry", ISPRS Technical Commission VI Symposium, 19-21, May, Wuhan, China.

Tsai*, F., H. Chang and Y.-C. Liu, 2014. "Applications of Three-Dimensional Spatial Data Visualization for Community Hazard Mitigation Decision Support", International Symposium on Remote Sensing (ISRS2014), 16-18 Apr., Busan, Korea.

Chang, H. and F. Tsai*, 2014. "Improvement of vision-based trajectory estimation by low-cost MEMS-based IMU", International Symposium on Remote Sensing

(ISRS2014), 16-18 Apr., Busan, Korea.

蔡富安*、張桓、劉育青, 2013. "三維房屋模型與視覺化圖資於社區防災應用系統"，第七屆海峽兩岸測繪發展研討會，Nov. 21-23, 香港。

劉育青、蔡富安*、陳良健、林耀宗、李訢卉, 2013. "三維數位地下管線資訊系統建置與應用"，第七屆海峽兩岸測繪發展研討會，Nov. 21-23, 香港。

葉家忠、蔡富安*、張智安、陳良健、李訢卉, 2013. "道路測繪光達點雲及影像資料數化整合作業環境"， 第七屆海峽兩岸測繪發展研討會，Nov. 21-23, 香港。

Tsai*, F. and H. Chang, 2013. "Detection of Vanishing Points Using Hough Transform for Single View 3D Reconstruction", Proc. 34th Asian Conference on Remote Sensing (ACRS2013), Oct. 20-24, Bali, Indonesia.

Lai, J-S and F. Tsai*, 2013. "Sequent Data Mining Analysis for Rainfall-based Landslide Events with the Refinement of Landslide Samples and Feature Reduction", Proc. 34th Asian Conference on Remote Sensing (ACRS2013), Oct. 20-24, Bali, Indonesia.

Shih, K-L and F. Tsai*, 2013. "Using Mobile Mapping System to Extract Traffic Signs for Road Model Reconstruction", Proc. 34th Asian Conference on Remote Sensing (ACRS2013), Oct. 20-24, Bali, Indonesia.

Cheng, Y-S and F. Tsai*, 2013. "Using Spline Curve Fitting to Extract Features from Full-waveform LIDAR Data", Proc. 34th Asian Conference on Remote Sensing (ACRS2013), Oct. 20-24, Bali, Indonesia.

Lai, J-S and F. Tsai*, 2013. "Strategy to predict sequent post-landslide events induced by heavy rainfall", 第 32 屆測量及空間資訊研討會，Aug. 29-30, 新竹市，台灣。

Chang, H. and F. Tsai*, 2013. "A new vanishing points detection method based on Hough Transform", 第 32 屆測量及空間資訊研討會，Aug. 29-30, 新竹市，台灣。

施凱倫、蔡富安*，2013，"以測繪車影像進行細部道路模型建置"，第 32 屆測量及空間資訊研討會，Aug. 29-30, 新竹市，台灣。（學生論文獎）

鄭亦修、蔡富安*，2013，"雲線應用於全波形光達資料之波形擬合"，第 32 屆測量及空間資訊研討會，Aug. 29-30, 新竹市，台灣。

Chang, H. and F. Tsai*, 2013, "Combining Vision-Based Trajectory and Wireless Sensor Network for Location Estimation and Tracking", Proc. 9th International Symposium on Remote Sensing 2013 (ISRS2013), May. 15-17, Chiba, Japan.

Lu, Y-H. and F. Tsai*, 2013, " Analysis of Full-Waveform Lidar Data for Land Cover Classification", Proc. 9th International Symposium on Remote Sensing 2013 (ISRS2013), May. 15-17, Chiba, Japan. (Best Student Paper Award)

Tsai, F.*, Chang, H. and C. J. Lan, 2013, "Underground Utility Network Modeling for Cyber City", Proc. 9th International Symposium on Remote Sensing 2013 (ISRS2013), May. 15-17, Chiba, Japan.

Liu, Y. C., Tsai, F.*, Chang, H. and C. T. Chen, 2013, "Three Dimensional GIS Data Integration and Application for Community Hazard Mitigation Decision Support", Proc. 10th International Symposium on Remote Sensing 2013 (ISRS2013), May. 15-17, Chiba, Japan.

Lai, J.-S., and F. Tsai*, 2013. Using data mining techniques to predict sequent post-landslide events by multi-classifier strategy and combination, Proc. 9th International Symposium on Remote Sensing, Chiba, Japan.

Chang, H. and F. Tsai*, 2013, "Camera Trajectory Estimation Using Vision-Based Approach", The International Symposium on Mobile Mapping Technology

2013 (MMT2013), May. 1-3, Tainan, Taiwan.

賴哲儇、蔡富安*，2013，"資料探勘技術預測豪雨促發之崩塌事件"，第六屆海峽兩岸遙測/遙感研討會(RSATS2013)，Mar. 18-22, 2013, 桃園，台灣。（最佳學生論文獎）

張桓、蔡富安*， 2013, "電腦視覺式相機路徑估測與可行性評估", 第六屆海峽兩岸遙測/遙感研討會(RSATS2013), Mar. 18-22, 2013, 桃園，台灣。

Tsai, F.*, Y.-S. Chiou and H. Chang, 2012, "A Positioning Scheme Combining Kalman Filtering with Vision Assisting for Wireless Sensor Networks", Proc. 2nd International Conference on Engineering and Technology Innovation 2012 (ICETI2012), Nov. 2-6, 2012, Kaohsiung, Taiwan.

Tsai*, F., H. Chang, Y-S Chiou, Y-T Lin and S-H Li, 2012. "Combing Kalman filtering and vision-based trajectory estimation", Proc. 33rd Asian Conference on Remote Sensing (ACRS2012), Nov. 26-30, Pattaya, Thailand.

Chen, T-F, H. Chang and F. Tsai*, 2012. "Integrating depth map and IMU data for 3D reconstruction from a single image", Proc. 33rd Asian Conference on Remote Sensing (ACRS2012), Nov. 26-30, Pattaya, Thailand.

Lai, J-S and F. Tsai*, 2012. "Feature Extraction for Hyperspectral Image Cubes by Noise-Adjusted Canonical Analysis", Proc. 33rd Asian Conference on Remote Sensing (ACRS2012), Nov. 26-30, Pattaya, Thailand.

Tsai*, F., J-S Lai and T-H Lin, 2012. "Mitigating Multi-temporal Difference of NDVI by Pseudo Invariant Features Normalization for Mountain Region", Proc. 8th International Symposium on Remote Sensing (ISRS2012), Oct. 10-12, Incheon, Korea.

Lu, Y-H and F. Tsai*, 2012. "Gaussian Fitting of Full-waveform LiDAR Data for Land Cover Classification", Proc. 8th International Symposium on Remote Sensing (ISRS2012), Oct. 10-12, Incheon, Korea.

Tsai, F*., Lai, J.-S., Chen, W. W., and Lin, T.-H., 2012. "Topographic and vegetative factors of data mining for landslide verification and risk assessment", the 3rd International Conference on Soil Bio- and Eco-Engineering: The Use of Vegetation to Improve Slope Stability, July, 2012, Vancouver, Canada.

Tsai*, F., and J-S Lai, 2012, "Evaluation and verification of landslides using spatial data mining", Proc. of the 52nd Spring Conference of the Remote Sensing Society of Japan, May 23-24, Tokyo, Japan.

Tsai*, F., W-R Lin, Y-T Lin, S-H Li and C-T Chen, 2011, "3D GIS applications in hazard survey and urban modeling", Proc. 7th International Symposium on Remote Sensing (ISRS2011), Nov. 2-4, Yeosu, Korea.

Cheng, M-L and F. Tsai*, 2011, "Application of building models with information-based attributes", Proc. 7th International Symposium on Remote Sensing (ISRS2011), Nov. 2-4, Yeosu, Korea.

Lee, C-H, H. Chang, F. Tsai*, and H-T Huang, 2011, "Estimation of camera parameters from video image matching", Proc. 7th International Symposium on Remote Sensing (ISRS2011), Nov. 2-4, Yeosu, Korea.

Chen, T-Z, H. Chang and F. Tsai*, 2011, "3D model reconstruction using a single image with IMU data", Proc. 32nd Asian Conference on Remote Sensing (ACRS2011), Oct. 3-7, Taipei, Taiwan.

Lee, C-H, H. Chang, F. Tsai* and H-T Huang, 2011, "Using video images to obtain camera orientation and translation parameters", Proc. 32nd Asian Conference on Remote Sensing (ACRS2011), Oct. 3-7, Taipei, Taiwan.

Chang, H. and F. Tsai*, 2011, "Single view reconstruction for specific curve structures", Proc. 32nd Asian Conference on Remote Sensing (ACRS2011),

Oct. 3-7, Taipei, Taiwan.

Cheng, M-L, C-R Lee, F. Tsai* and C-T Chen, 2011, "Integration of building models with information-based attributes", Proc. 32nd Asian Conference on Remote Sensing (ACRS2011), Oct. 3-7, Taipei, Taiwan.

蔡富安*、林宛蓉、陳品學, 2011, "擬真三維數碼城市視覺模擬的效能提昇", 2011 海峽兩岸遙感/遙測研討會, Aug. 8-12, 黑龍江哈爾濱。

Tsai*, F., P-S Chen and H. Chang, 2010, "Generating Facade Texture from Close-Range Images for Photo-Realistic City Modeling", Proc. 31st Asian Conference on Remote Sensing (ACRS2010), Nov. 1-5, Hanoi, Vietnam.

Lee, M-J and F. Tsai*, 2010, "Increase the Level of Detail of 3D Building Models with Close-Range Images", Proc. 31st Asian Conference on Remote Sensing (ACRS2010), Nov. 1-5, Hanoi, Vietnam.

Hung, S-E and F. Tsai*, 2010, "Reconstruction of 3D Models for Complex Buildings from Airborne and Ground-based LIDAR Point Cloud Data", Proc. 31st Asian Conference on Remote Sensing (ACRS2010), Nov. 1-5, Hanoi, Vietnam.

Chang, H. and F. Tsai*, 2010, "Automatic Vanishing Points Calculation and 3D Building Model Reconstruction from a Single Image", Proc. 6th International Symposium on Remote Sensing (ISRS2010), Oct. 26-29, Jeju, Korea. (Best Paper Award)

Lin, W-J, F. Tsai*, L-C Chen, 2010, "Multiple LOD representation of polyhedral building models for large-scale digital city visualization", Proc. 6th International Symposium on Remote Sensing (ISRS2010), Oct. 26-29, Jeju, Korea.

蔡富安*、陳品學, 2010, "數位城市三維房屋模型擬真牆面紋理敷貼", 第六屆海峽兩岸測繪發展研討會, Oct. 14-16, 澳門。

劉育青、陳良健、蔡富安、羅詔元, 2010, "數位城市中之房屋模型:變遷與模擬", 第六屆海峽兩岸測繪發展研討會, Oct. 14-16, 澳門。

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Chang, H. and F. Tsai*, 2009, "3D Building Model Reconstruction from A Single Image", Proc. 30th Asian Conference on Remote Sensing (ACRS2009), Oct.

18-23, 2009, Beijing, China. (Top Best Student Paper Award; JSPRS Best Student Paper Award)

Tsai, F*., and L-C Chen, 2009, "Landslide Detection Using Satellite Imagery and Spatial Analysis", 2009 Taiwan-Japan Symposium on the Advancement of Urban Earthquake Hazard Mitigation Technology, pp. 47-52, Sep. 21-22, 2009, Zhongli, Taiwan.

張桓、蔡富安*，，2009, "以單張影像重建三維建物模型", 第 28 屆測量及空間資訊研討會(SG2009), Aug. 27-28, 2009, 中壢。（Best Student Paper Award）

賴哲儇、蔡富安*，2009, "高光譜影像立方體於特徵空間之三維紋理計算", 第 28 屆測量及空間資訊研討會(SG2009), Aug. 27-28, 2009, 中壢。（Best Student Paper Award）

Tsai*, F., T-H Lin and G-R Liu, 2009, "Extraction of Landcover Related Parameters from Remote Sensing Data for Environmental Assessment", Proc. 2009 Asian Oceania Geosciences Society Conference (AOGS2009), Aug. 11-15, 2009, Singapore.

Tsai*, F., T-A Teo, L-C Chen and S-J. Chen, 2009, "Construction and Visualization of Photo-Realistic Three-Dimensional Digital City", 2009 Joint Urban Remote Sensing Event, Shanghai, China, May 20-22, 2009.

Tsai*, F., T-A Tea, L-C Chen, W. Hsu, D-M Huang, 2009, "Cyber City Implementation and Applications to Hazard Mitigation", Proc. 6th International Conference on Urban Earthquake Engineering", Mar. 3-4, 2009, Tokyo, Japan.

Tsai*, F., T-H Lin, G-R Liu, 2008, "Landcover Monitoring Using Satellite Imagery for Environmental Assessment", Proc. 29th Asian Conference on Remote Sensing (ACRS2008), Nov. 10-14, Colombo, Sri Lanka.

Lin, W-R, F. Tsai*, J-J Chen, 2008, "Level of Detail Generation of 3D Building Models", Proc. 29th Asian Conference on Remote Sensing (ACRS2008), Nov. 10-14, Colombo, Sri Lanka.

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28th Asian Conference on Remote Sensing (ACRS2007), Nov. 12-16, 2007, Kuala Lumpur, Malaysia.

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Tsai*, F. and L-C Chen, 2007, "Long-Term Landcover Monitoring and Disaster Assessment in the Shihmen Reservoir Watershed Using Satellite Images", 13th CEReS International Symposium on Remote Sensing, Oct. 29-30, 2007, Chiba, Japan.

Tsai*, F. and L-C Chen, 2007, "Cyber City Implementation and Visualization for Disaster Simulation and Management", 2007 Taiwan-Japan Symposium on the Advancement of Urban Earthquake Hazard Mitigation Technology, pp. 97-104. Sep. 26-27, 2007, Zhong-Li, Taiwan.

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Tsai*, F., E-K Lin, M-J Chou and G-R Liu, 2006, "Eco-Disaster Management: Mapping Invasive Plants with Hyperspectral and High Resolution Satellite Imagery", 2006 Taiwan-Japan Workshop on Application of Remote Sensing for Disaster Monitoring and Mitigation, Dec. 2006, Zhong-Li, Taiwan.

Tsai*, F., J-K Liu and K-H Hsiao, 2006, "Morphological Processing of Video for 3D Building Model Visualization", Proc. 27th Asian Conference on Remote Sensing (ACRS2006), Oct. 2006, Ulaanbaatar, Mongolia.

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Rau*, J. Y., L. C. Chen, F. Tsai, K. H. Hsiao, W. C. Hsu, 2006, "Automatic Generation of Pseudo Continuous LODs fro 3D Polyhedral Building Model", International Workshop on 3D Geoinformation 2006, Aug. 7-8, Kuala Lumpur, Malaysia.

Tsai*, F., S.-Q. Lin, J.Y. Rau, L.C. Chen, G.R. Liu, 2005, "Destriping Hyperion Imagery Using Spline Interpolation", Proc. 26th Asian Conference on Remote Sensing (ACRS2005), Nov. 2005, Hanoi, Vietnam.

Tsai*, F., Y.-H. Lian, K.-H. Hsiao, 2005, "Combining Level-of-Details on Terrain

Meshes and Texture Images for Landscape Visualization", Proc. 26th Asian Conference on Remote Sensing (ACRS2005), Nov. 2005, Hanoi, Vietnam.

Tsai*, F., C.-H. Chen, J.-K. Liu, 2005, "Producing Realistic Building Texture Using Video Mosaic", Proc. 26th Asian Conference on Remote Sensing (ACRS2005), Nov. 2005, Hanoi, Vietnam.

Rau*, J.-Y, T.-A. Teo, L.-C. Chen, F. Tsai, K.-H. Hsiao, W.-C. Hsu, 2005, "Generation of Photo-Realistic City Model", 2005 台灣地理資訊學術研討會 (TGIS2005)，台中。

Tsai*, F., 2005, "Construction of An Interactive GeoVisualization System for Environmental and Engineering Decision Support", 2005 海峽兩岸遙測研討會，雲南昆明。

饒見有*, 張智安, 蔡富安, 陳良健, 蕭國鑫, 徐偉城, 2005."三維製圖科技於像真城市模型之製作", 第二十四屆測量學術及應用研討會論文集, pp.1057-1064, 台北。

蔡富安, 2005, "監測外來種植物，衛星遙測技術", 大地地理雜誌, vol. 208, pp. 20-21.

饒見有*, 張智安, 蔡富安, 陳良健, 蕭國鑫, 徐偉城, 2005, "建構三維擬真城市模型之研究", 第三屆數位地球國際研討會論文集, pp. 389-400, 台北。

饒見有、張智安、蔡富安、陳良健、蕭國鑫、徐偉誠，2005, "像真城市模型之建構與淹水視覺模擬應用"，電子計算機與土木水利工程應用研討會，台南。

Tsai*, F. and H-C Lin, 2004, Realistic Texture Mapping On 3D Building Models , in Proc. 25th ACRS, Nov. 2004, Chiang Mai, Thailand, pp. 204-208.

Rau*, J-Y, J. Lin, T-A Teo, L-C Chen, F. Tsai, 2004, Near Photo Realistic Visualization of City Model , ISPRS International Workshop on Processing and Visualization using High-Resolution Imagery, Nov. 2004, Pitsanulok, Thailand.

饒見友*、林哲安、張智安、蔡富安、陳良健，2004, "三維虛擬城市中建物紋理貼圖之研究", 第二十三屆測量學術研討會， Sep. 2004, 台中。

Tsai*, F. and C-F Chen, 2004, "Detecting Invasive Plants Using Hyperspectral And High-Resolution Satellite Images", in Proc. The XXth ISPRS Congress, vol. XXXV-B7, July 2004, Istanbul, Turkey.

Tsai*, F., 2003, "A Geovusualization System for Engineering and Environmental Analysis and Decision Support", 2003 中華地理資訊研討會，高雄。

Tsai*, F., M. Laba, and D. O'gurcak, 2003, "Hyperspectral Data Analysis for Identifying Invasive Plants", 二十二屆測量學術研討會，桃園。

Tsai*, F. and W. Philpot, 2001, "A Derivative Procedure to Improve Hyperspectral Image Classification for Land-Cover Applications", The 5th Airborne Remote Sensing Conference, Sep. 2001, San Francisco, CA USA.

Patents:

Method of Location Estimation and Tracking Using Distributed Message Passing of Heterogeneous Observation Data Accompanied with Low-Complexity Data-Fusion Scheme (ROC: I 444073; & US: 9,147,165 B2)

A Method and System for Generating Photo-realistic Digital City Models (ROC: 084115908)

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EDUCATION

UNIVERSITY OF GEORGIA, Athens, Georgia
Ph.D. in Geography, 1995-2001
Master of Science in Computer Science, 1998-2001
Graduate Certificate in Conservation and Sustainable Development, 1996-1997
Master of Science in Forest Resources, 1992-1995
PUNJAB ENGINEERING COLLEGE / PUNJAB UNIVERSITY, Chandigarh, India
Bachelor of Engineering in Mechanical Engineering, 1987-1991

CERTIFICATIONS/LICENSES

- Esri Certified Instructor 1997-2012
- South Carolina State Board of Registration for Professional Engineers and Land Surveyors (GIS) License 2004
- Certified Mapping Scientist (GIS Certification) 2007
- GIS-Professional (GISP, GIS Institute Certification) 2009-2014
- Certified Technical Trainer (CTT) 2009
- Esri Desktop Certification (Associate) 2010

PROFESSIONAL EXPERIENCE

FAYETTEVILLE STATE UNIVERSITY, Fayetteville, North Carolina   2010 – present
Assistant Professor, Department of Government and History
- Teach geospatial courses such as GIS and remote sensing.
- Developed the accredited GEOINT Undergraduate Certificate / Minor
- Mentor undergraduate students.
- Partner with local groups such as the City of Fayetteville, and Sustainable Sandhills to create GIS content and internship opportunities for students.

CITY OF DURHAM, Durham, NC   2010 – present
GIS Project Manager (part time)
- Work with developers and GIS users to guide GIS related projects such as the TELUDE (Transportation Environment Land Use Data Enterprise) geospatial data warehouse that was developed using Esri technology (ArcGIS Server), SQL Server, and FLEX API.
- Create project reports and publications on geospatial projects.

NORTH CAROLINA CENTRAL UNIVERSITY, Durham, North Carolina   2005 – 2010
Visiting Assistant Professor, Department of Environmental, Earth and Geospatial Sciences
- Established the Geospatial Research, Innovative Teaching and Service (GRTIS) Center.
- Worked with local clients such as the City of Durham to implement geospatial projects with the goal of training students in project management and practical applications in GIS.
- Taught geospatial courses "Geographic Information Systems", "Remote Sensing of the Environment", "Principles of Remote Sensing", "Conservation of Natural Resources", and "Applied GIS".
- Wrote grant proposals to funding agencies such as the National Science Foundation and National Geospatial-Intelligence Agency.
- Helped establish a GIS Certificate program for graduate and undergraduate students.

FUGRO EARTHDATA INC., Frederick, Maryland   2001–2005
Project Manager, Fugro EarthData Solutions
- Managed deliverables, schedules, personnel, and other related issues on client projects.
- Integrated GIS (ArcGIS, ArcSDE, ArcIMS), databases (SQL Server 2000), and internet technologies to enhance and support project management.

PROFESSIONAL EXPERIENCE (*Continued*)

- Assisted Florida Power and Light with GIS applications in the aftermath of Hurricane Charley.
- Provided GIS support to the Airborne Rapid Imaging for Emergency Support (ARIES) program
- Developed software/utilities in C, C++, and Visual Basic for Applications.

UNIVERSITY OF GEORGIA, Athens, Georgia   1992 – 2001
Graduate Research Assistant, Graduate Teaching Assistant Department of Geography
Manager Training, Sustainable Human Ecosystem Laboratory, Department of Anthropology
Tutor, Athletic Association

NORTHEAST GEORGIA REGIONAL DEVELOPMENT CENTER, Athens, Georgia   1994 – 1995
GIS Technician

WORLD WILDLIFE FUND, New Delhi, India   1991 – 1992
Education Officer

RECENT PUBLICATIONS

Malhotra, R. 2015. "The Role of Online Services in Teaching Geospatial Intelligence (GEOINT)", *27th International Cartographic Conference and 16th General Assembly*, Rio de Janeiro, Brazil, August 23-28, 2015. ISBN 978-85-88783-11-9.

Jiang, M., Ding, X., Hanssen, R.F., **Malhotra, R.,** Chang, L. 2015. "Fast Statistically Homogeneous Pixel Selection for Covariance Matrix Estimation for Multitemporal InSAR", *IEEE Transactions on Geoscience and Remote Sensing* Vol 53, No. 3:1213-1224.

Jiang, M., Ding, X., Tian, X., **Malhotra, R.**, and Kong, W. 2014. "A hybrid method for optimization of the adaptive Goldstein filter", *ISPRS Journal of Photogrammetry and Remote Sensing* 98:29-43.

Malhotra, R. and Tomlinson, L. 2014. "Strangers on a Train", *Southeastern Geographer* 54(1):1-3.

Czejdo, B. D., Bhattacharya, S., and **Malhotra R**. 2013. "Interactions of Dynamic Geospatial Objects with Static Landmarks", *Journal TTS (Technika Transportu Szynowego)* Num.10 :(2255-2264).

Malhotra, R., Virk, G., Nwoko, F., Klepper, A. 2013. "Web-based Geospatial Technology tools for Metropolitan Planning Organizations", *Southeastern Geographer,* 53(3) 296-309.

Vlahovic, G. and **Malhotra, R.** 2011. The Esri Site License Program: Enhancing Geospatial Education at North Carolina Central University. *The North Carolina Geographer* (18):53-60**.**

Malhotra, R. and Vlahovic, G. 2011. "GIS Educational Opportunities at Historically Black Colleges and Universities in the United States." *Southeastern Geographer*, 51(3): 443-456.

Vlahovic, G and **Malhotra, R.** 2010 "Geospatial Education at North Carolina Central University – an HBCU Perspective." *Southeastern Geographer*, 50(2): 258–271.

Malhotra, R., Vlahovic, G., Madden, M., Tilley, K., and Renslow, M. "The Role of Geospatial Associations in Promoting the Profession to Young People". *Proceedings of the ISPRS Mid-Term Symposium Commission VI 'Cross-Border Education for Global Geo-information'*, Enschede, The Netherlands, June 2-4, 2010.

Malhotra, R. and Vlahovic, G. "ASPRS Provisional Certificate Program – A Student Focused Opportunity." *Photogrammetric Engineering and Remote Sensing*, August 2009, p. 927-930.

RECENT GRANTS & AWARDS

FAYETTEVILLE STATE UNIVERSITY, Fayetteville, North Carolina
- **UNC-General Administration** (Principal Investigator): Peace, Technology, and Social Media – 2014 ($6,000)
- **National Geospatial Intelligence Agency** (Sub-Agreement with NCCU) (Principal Investigator): Talent Pipeline - Increasing Diversity and Enhancing Geospatial Programs – 2013 ($307,363)

- **RECENT GRANTS & AWARDS (*Continued*)**

- **National Geospatial Intelligence Agency** (Principal Investigator): Developing the Geospatial Intelligence Certificate at Fayetteville State University – 2012 ($443,000)
- **Housing and Urban Development** (Sub-Agreement with NCCU) (Principal Investigator): Building Minority Ownership Project – 2011 ($35,000)

NORTH CAROLINA CENTRAL UNIVERSITY, Durham, North Carolina
- **National Science Foundation** (Co-Principal Investigator): Pathway to Success – Research and Internship Opportunities for Students – 2008 ($150,072)
- **National Science Foundation** (Co-Principal Investigator): "Integrative Geophysical Investigation of the New Madrid Seismic Zone: Collaborative research NCCU and CERI", research project under Centers for Research and Excellence in Science and Technology (CREST): Computational Center for Fundamental and Applied Science and Education at NCCU – 2008 ($736,214)
- **National Geospatial-Intelligence Agency** (Co-Principal Investigator): Geospatial Research and Internship Partnerships – 2008 ($139,911)
- **ASPRS**: Presidential Citation for pioneering the concept of Provisional Certification – 2007
- **NCCU**: Teaching and Learning with Technology Grants – 2006 ($3000)
- **National Science Foundation** (Co-Principal Investigator): Targeted Infusion Grant: Development of a GIS Certification Program and Preparing for GIS Accreditation at North Carolina Central University – 2006 ($236,910)
- **National Science Foundation** (Co-Principal Investigator): Launching the GIS Research Innovative Teaching and Service (GRITS) Center at the North Carolina Central University – 2006 ($129,608)