Dewi Endah Kharismawati

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PROFESSIONAL SUMMARY

Dewi is an innovative Ph.D. candidate specializing in deep learning, machine learning, and computer vision for agricultural digital phenotyping. Proven track record in developing advanced algorithms for UAV-based systems, 3D reconstruction, image registration, object detection, and segmentation. Skilled in Python programming, cloud platforms, and scientific experiment design.

EDUCATION

PhD in Computer Science

University of Missouri – Columbia | Anticipated Graduation: December 2025 | GPA: 3.822

Bachelor of Science in Computer Science, Minor in Mathematics

University of Missouri – Columbia | Graduated: December 2017 | GPA: 3.693

TECHNICAL SKILLS

- Programming Languages: Python, MATLAB, Java, C, C++
- Frameworks/Libraries: TensorFlow, PyTorch, Keras, Open3D, OpenCV, Scikit-Learn, NumPy, SciPy
- Cloud Platforms: AWS, Google Cloud, Microsoft Azure
- Web Technologies: PHP, HTML, CSS
- Databases: MySQL, MongoDB
- Tools: GitHub, Pix4D, ArcMap, COLMAP

WORK EXPERIENCE

Graduate Research Assistant to Dr. Toni Kazic

University of Missouri, Columbia, MO | January 2019 – Present

- Developed *MaiZaic*, a video mosaicking pipeline with dynamic frame sampling, automated calibration, unsupervised homography estimation (*CorNetv3*), shot detection, and mini-mosaics, achieving 96.5% accuracy—11% better than ASIFT.
- Created *CorNet*, an unsupervised deep homography estimation pipeline to mosaic aerial imagery without telemetry, utilizing VGG8-like architecture with Python, TensorFlow, and OpenCV, achieving 10x faster processing with comparable accuracy to ASIFT.
- Built *DeepMaizeCounter (DMC),* an advanced stand counting of seedling maize using YOLOv4, YOLOv7, and YOLOv9, integrating automatic row and range detection, achieving an r^2 of 0.906 for raw frames and 0.616 for fragmented mosaics.
- Developed *PointillistMaize*, generating 3D maize reconstructions from 360° aerial videos using SfM, NeRF, and Gaussian Splatting. NeRF produced 90.4% of points and 7.3 times faster, while Gaussian Splatting produced 8.1% of points but 3 times faster than SfM.
- Collaborated on the development of *Video Mosaicking and Summarization (VMZ)*, a robust mosaicking of maize fields from aerial imagery, achieving over 95% SSIM across all test datasets through precise camera calibration in Python and MATLAB.
- Independently managed an experimental agricultural plot, overseeing the entire crop lifecycle from planting to harvest.
- Engaged in handsS-on agricultural activities such as planting, nurturing, pollinating, and harvesting maize during field seasons, ensuring the success of research objectives and crop yield optimization.

Graduate Teaching Assistant

University of Missouri, Columbia, MO | January 2018 – Present

- Supported over 100 students in Digital Logic by managing assignments, exams, and conducting office hours to provide individualized academic assistance.

Student Researcher to Dr. John Lorry

University of Missouri, Columbia, MO | March 2018 – December 2018

- Mapped high-resolution UAV imagery using Pix4D and conducted segmentation of corn and soil using ExG and RG indices to assess nitrogen deficiency, resulting in actionable recommendations for targeted nitrogen spraying.

Information Service Intern

Philip Morris International, Jakarta, Indonesia | May 2015 – August 2015

- Developed a supply chain management dashboard that enhanced visibility and reduced administrative efforts through database synchronization, improving operational efficiency.n integrated Supply Chain Management dashboard to enhance visibility and transparency for customers and stakeholders.

CERTIFICATIONS

- FAA Part 107 Remote Pilot Certificate with over 200 hours of flying experience.

PUBLICATIONS

2020   **Kharismawati, D. E.,** Akbarpour, H. A., Aktar, R., Bunyak, F., Palaniappan, K., and Kazic, T. (2020). *CorNet*: unsupervised deep homography estimation for agricultural aerial imagery. In *16th European Conference on Computer Vision 2020 (ECCV2020),* eds. V. Ferrari, B. Fisher, C. Schmid, and E. Trucco. 402–419. doi:10.1007/978-3-030-65414-6 28

2020   Aktar, R., **Kharismawati, D. E.,** Palaniappan, K., Aliakbarpour, H., Bunyak, F., Stapleton, A. E., et al. (2020). Robust mosaicking of maize fields from aerial imagery. *Applications in Plant Sciences.* 8, e11387. doi:10.1002/aps3.11387