Zhou Yuhan

Tel：13322855431 Email：LauraChow@whu.edu.cn

EDUCATION BACKGROUND

Wuhan University 2013/09-2017/06

- Degree: Bachelor of Engineering
- Specialty: Remote Sensing Science and Technology
- GPA: 3.45/4.0
- 2014 Second-Class Scholarship of Wuhan University
- 2017 Third Prize of National Mathematics Competition

Wuhan University 2017/09-2019/06

- Degree: Master of Engineering
- Specialty: Surveying and Mapping Engineering
- GPA: 3.53/4.0 (89.17/100)

INTERN & WORK EXPERIENCES

Wuhan Moxiaochao Technology Co., Ltd. 2017/03-2017/06

Position: Software Engineer

- Designed all the tables of product database（sql）
- Implemented database management system（PHP）, including access management and data manipulation
- Designed data flow between App and server
- Implemented data respond and process in server（PHP）

Wuhan Luoyunding Technology Co., Ltd. 2019/04-2020/05

Position: Software Engineer

- Implemented move generation of checker(100 & 64) based on bitboard representation and padded array representation, which is more efficient than the intuitive coordinates model.（Javascript）
- Implemented front-end of WeChat Mini Program（Javascript & wxml &wxss）
- Completed the online battle engine via a framework entitled mqant (https://github.com/liangdas/mqant)（Go）
- Implemented an AI checker player using alpha beta pruning

RESEARCH EXPERIENCES

DKDFN: Domain Knowledge-Guided Deep Collaborative Fusion Network for Multimodal Remote Sensing Image Land Cover Classification 2021/03

Multimodal data Fusion:

- The network adopts a multihead encoder structure, which probablizes sufficient mining of complementary information from multiple modalities, which are Sentinel-2, Sentinel-1, and SRTM Digital Elevation Data (SRTM) in our case.

Domain knowledge incorporation:

- The network adopts a multibranch decoder, which enables land cover classification in a multitask learning setup, performing semantic segmentation and reconstructing multimodal remote sensing indices, which are selected as representatives of domain knowledge. This design incorporates domain knowledge in an effective end-to-end manner.

Boosting the performance of minorities:

- The training stage of our work is supervised by our proposed asymmetry loss function (ALF), which boosted performance on nearly all categories, especially the categories with a low frequency of occurrence.

Global Cropland Mapping 2020/07

Fully Connected Network based Cropland Extraction

- Chose 50 random 192*192 patches in each 5 degree grids around the globe. Spectral features (R, G, B, NIR, SWIR1) are extracted from Landsat and temporal feature (NDVI Entropy) is extracted from MODIS. We used GFSAD30 as our training label for its highest accuracy among 4 cropland mapping products (GFSAD30, GLCFCS30, GlobalLand30Dataset, and

FROM_GLC).
- SMOTE was used for oversampling and data augmentation was performed to these training data.
- PSPNet was trained.
- The model was uploaded to Google Colab and prediction was done for each grid.

High resolution image feature fused cropland mapping
- Voted three cropland products (GFSAD30, GLCFCS30, GlobalLand30Dataset) to generate the uncertain cropland region (2 products classified the pixel as cropland).
- Ranked the 5*5 degree grids according to the percentage of uncertain cropland pixels in each grid and extracted the first 50 grids with the highest uncertainty.
- The uncertain points in each grids were selected randomly as our training points whose corresponding high resolution images were downloaded and manual interpreted to get the label of each points.
- We used these points and their corresponding images to train a SENet and extract the high-resolution feature as textual features.
- Extract spectral features of each point from Landsat.
- Extract temporal features (NDVI Entropy) from MODIS.
- For each grid, combine textual, spectral, and temporal features to train a random forest model for classification.

Face 3D Reconstruction Based on Single Image 2018/09

Morphological Modeling（C++）:
- Set up initial face model, which along with deformation parameters can be used to describe any face
- Extracted face landmarks based on input image, and calculated corresponding deformation parameters
- Reconstructed 3D face model using deformation parameters
- Simplified 3D face model because of excess amount of points

Texture Modeling（C++）:
- Calculated face texture coordinate using Isomap, extracted the texture of the core region of face
- Uniformed the core region of face using Mask
- Extracted the color with highest frequency as face skin color
- Fill the remained region of face with the extracted color and performed natural transition of two region based on multicentric eclosion

Face Expression Extraction Based on Intel RealSense 2017/04
- Get depth image using Intel RealSense
- Extracted facial landmarks
- Calculated facial expression parameters using landmarks from neutral face expression and current face expression

Real Estate Wall Semantic Recognition 2016/06
- Distinguished the walls based on corresponding normal vector and projected the walls onto a 2D plane
- Semantic recognition of hollowing, protruding lines, doors, windows, etc. according to projection results

Publications

Li, Y. *, **Zhou, Y. ***, Zhang, Y. *, Zhong, L., Wang, J., & Chen, J. (2022). DKDFN: Domain Knowledge-Guided deep collaborative fusion network for multimodal unitemporal remote sensing land cover classification. ISPRS Journal of Photogrammetry and Remote Sensing, 186, 170-189.

OTHER

English Level: CET 4 & CET 6 & TOEFL (108)

Programming languages: Python / C++ / Javascript / Go
Proficient with GEE (Google Earth Engine)