**I-GUIDE MODEL CARD**

The I-GUIDE Model Card is an easy-to-use tool that will allow you to create documentation for each model that you create or use in a project.

Using this tool will help facilitate transparency and reproducibility about your project. It will also help you comply with relevant policies of journals, funding agencies, and universities.

The Model Card applies to:

* Pre-existing models acquired from other sources, e.g., produced by other researchers;
* Models you and your collaborators produced yourselves;
* Models you and your collaborators produced by integrating two or more other models (e.g., coupling).

**Model Card Attribution**

This Model Card template is an adapted version of the I-GUIDE Data Card template, which itself is based on Google’s *Data Cards Playbook* (https://pair-code.github.io/datacardsplaybook/).  
It has been restructured to address key considerations for geospatial model transparency, performance evaluation, and ethical deployment, in alignment with the I-GUIDE research lifecycle.

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AI-generated content may be incorrect.

* + 1. **BASIC INFORMATION**

|  |  |
| --- | --- |
| Model Card ID Number | *(Suggested format: MC-01, MC-02, etc.)* |
| Model Name | *(Short, descriptive name)* |
| Model Version | *(Specify version number and release date)* |
| Persistent Identifier | *(Provide a DOI)* |
| Outputs Supported | *(List publications whose findings are supported by this model)* |
| Model Card Author | *(Name, affiliation, contact information)* |

* + 1. **MODEL OVERVIEW**

|  |  |  |
| --- | --- | --- |
| Model Type | *(Select all that apply)*  ☐ AI model: *(Specify type)*  ☐ Statistical model: *(Specify type)*  ☐ Other: *(Specify)* | |
| Purposes | *(Select all that apply)*  ☐ Classification  ☐ Decision support  ☐ Forecasting  ☐ Regression  ☐ Simulation  ☐ Spatial analysis  ☐ Other: *(Specify)* | |
| Domains of Application | *(Select all that apply)*  ☐ Climate science  ☐ Economics  ☐ Environmental impact modeling  ☐ Geospatial analysis  ☐ Hydrology  ☐ Population modeling  ☐ Other social systems modeling: *(Specify)*  ☐ Other: *(Specify)* | |
| Model Authors and Developers | *(Individuals, organizations, or institutions responsible for creating the model; add contact information)* | |
| Source and Acquisition Method | ☐ Acquired (from external source)  ☐ Developed internally  ☐ Integrated from multiple models (e.g., coupled) | |
| User Licensing | ☐ Open source: *(Specify license type)*  ☐ Proprietary: *(Specify owner)*  ☐ Other restrictions on use: *(Specify restrictions)* | |
| Storage Location | ☐ Repository: *(Name and link to dataset)*  ☐ Project-specific storage: *(Describe location)* |
| Access Control Policies | ☐ Open  ☐ Embargoed: *(Describe release timeline)*  ☐ Restricted: *(Describe access criteria)* |
| Use Case | *(Briefly describe the use case for which the model was designed)* | |

* + 1. **MODEL INPUTS AND TRAINING DATA**

|  |  |
| --- | --- |
| Model Inputs | *(List required inputs, e.g., satellite imagery, sensor data, demographic data)* |
| Input Data Types | *(Select all that apply)*  ☐ Raster  ☐ Tabular  ☐ Time Series  ☐ Vector  ☐ Other: *(Specify)* |
| Training Data Used | *(Name datasets used to train the model, and provide a DOI or URL where the dataset can be accessed. If dataset not known, write “Not known”. If dataset is not accessible, or only has restricted availability, state that here and describe restrictions)* |
| Training Dataset Representativeness | *(Describe any known issues regarding demographic and geographic representativeness, e.g., underrepresentation or overrepresentation of specific demographic groups)* |

* + 1. **MODEL STRUCTURES**

|  |  |
| --- | --- |
| Feature Selection | *(Specify which variables were included, and why, and whether any variables were excluded, and why)* |
| Hyperparameters and Tuning | *(List key hyperparameters and tuning strategies used)* |
| Software and Dependencies | *(Specify programming language, libraries, software, and dependencies required. Provide links to libraries and software where possible)* |

* + 1. **MODEL PERFORMANCE AND EVALUATION**

|  |  |
| --- | --- |
| Validation Approach | ☐ Cross-validation  ☐ Holdout set  ☐ Time series split  ☐ Other: *(Specify)* |
| Evaluation Results | *(Provide accuracy, precision-recall, F1-score, or other performance benchmarks)* |
| Testing or Validation Data Used | *(Name datasets used to validate the model, and provide a DOI or URL where the dataset can be accessed. If dataset not known, write “Not known”)* |
| *(If model is integrated from multiple other models)*  Contribution of Constituent Models | *(Describe the contribution of each constituent model to the integrated model’s performance)* |

* + 1. **MODEL ADAPTATION AND CUSTOMIZATION (for acquired or integrated models only)**

|  |  |
| --- | --- |
| Source Models | *(List original models integrated into this one, with proper citations and links, where available)* |
| Availability of Source Model Code | *(Complete for each original model)*  ☐ Openly available: *(Include link)*  ☐ Restricted availability: *(Describe restrictions)*  ☐ Unavailable: *(Explain reason for unavailability)* |
| Modifications | *(Describe any changes made to an acquired model, and why these changes were made, or how multiple models were integrated)* |
| Training Data Adjustments | *(Describe new datasets used for fine-tuning or retraining, and provide DOI or URL where the dataset can be accessed. If dataset is not accessible, or only has restricted availability, state that here and describe restrictions)* |

* + 1. **MODEL DEPLOYMENT AND USAGE**

|  |  |
| --- | --- |
| Computational Requirements | *(List hardware/software requirements)* |
| Geospatial Considerations | *(Specify if the model includes spatial constraints, e.g., region-specific calibration)* |

* + 1. **TRANSPARENCY, EXPLAINABILITY, AND INTERPRETABILITY**

|  |  |
| --- | --- |
| Model Transparency | ☐ Fully transparent (rule-based, interpretable ML)  ☐ Partially transparent (some explainability features)  ☐ Black box (deep learning, complex ML models) |
| Explainability Features | ☐ Feature importance analysis  ☐ LIME  ☐ Sensitivity analysis  ☐ SHAP values  ☐ Other: *(Specify)* |
| Interpretability Challenges | *(Describe any difficulties in explaining model outputs)* |
| Communication of Model Limitations | *(Describe how model limitations and uncertainty is communicated to prospective users of model impacts, or those potentially impacted by model impacts)* |

* + 1. **OTHER ETHICAL CONSIDERATIONS**

|  |  |
| --- | --- |
| Ethical Risks (Other Than Transparency, Explainability and Interpretability) | *(Select all that apply)*  ☐ Bias in training data: *(Specify)*  ☐ Intentional misuse risks: *(Specify)*  ☐ Privacy risks and surveillance: *(Specify)*  ☐ Security risks: *(Specify)*  ☐ Stigmatization of individuals or communities: *(Specify)*  ☐ Other: *(Specify)* |
| Measures Taken to Address Ethical Risks | *(Describe steps taken to mitigate ethical risks)* |
| Suitable Uses | *(Describe suitable types of use cases for this model)* |
| Unsuitable Uses | *(Describe unsuitable types of use cases for this model, i.e., where use poses unacceptable risks of ethical harms)* |