ONNX Survey Protocol

***Title**: Interoperability in Deep Learning: A User Survey and Failure Analysis of ONNX Model Converters*

***Recruitment**: In the study, we will recruit the users of Hugging Face PTMs, including PRO and normal accounts.*

***Compensation**: We will provide financial compensation to 3rd-party team participants. We will incentivize survey participants through a $10 gift card.*

Research Questions:

How and why do engineers use interoperability tools?

Questions

Demographic Questions

1. How many years have you worked on ML?
    a. 1 - 2 years
    b. 3 - 5 years
    c. 6 - 10 years
    d. 11 - 20 years
    e. > 20 years
2. How many years have you worked on SE?
    a. 1 - 2 years
    b. 3 - 5 years
    c. 6 - 10 years
    d. 11 - 20 years
    e. > 20 years
3. How would you rate your expertise in ML:
    a. **Novice**: I'm just starting out, and I usually get stuck in my machine learning projects and ask for help.
    b. **Intermediate**: I've done a few substantial machine learning projects and I usually can complete them without substantial assistance in my work.
    c. **Expert**: Other people often consult me for help on their machine learning projects.
4. How would you rate your expertise in SE:
    a. **Novice**: I'm just starting out, and I usually get stuck in my software engineering projects and ask for help.
    b. **Intermediate**: I've done a few substantial software engineering projects and I usually can complete them without substantial assistance in my work.
    c. **Expert**: Other people often consult me for help on their software engineering projects.
5. What is the size of your organization?
    a. Small (1 - 50 employees)
    b. Medium (51 - 250 employees)
    c. Large (251 - 1000 employees)
    d. Very large (1001+ employees)
6. What is the type of your organization? [https://www.ctc.ca.gov/credentials/leaflets/industry-sectors-chart]
    a. Arts, Media, and Entertainment
    b. Business and Finance
    c. Education

    d. Energy, environment, and utilities
    e. Health science and Medical technology
    f. Information and communication technology
    g. Manufacturing and product development
    h. Marketing, sales, and services
    i. Public services
    j. Transportation
    k. Other (text box)
7. What deployment contexts do you work on?
    a. Web application
    b. Desktop
    c. Cloud and data center
    d. IoT/embedded systems
    e. Mobile devices

ONNX Questions

1. Which framework do you use for model development?
    - PyTorch
    - TensorFlow
    - JAX/FLAX
    - MLX
    - Other
2. Do you use ONNX as part of your model development and deployment process?
3. Are there other interoperability tools that you use, if so which ones?
    - MMdnn
    - NNEF
    - Other
4. For what purposes do you use ONNX?
    - Framework-to-framework Model Conversion (e.g., converting from a model from TensorFlow to PyTorch)
    - Model Conversion for Deployment (e.g., converting to ONNX for deployment using ONNXRuntime or TensorRT.
    - Other (please specify)
5. Do you ever deploy directly from a deep learning framework such as PyTorch or TensorFlow? What do you consider when choosing between deploying from a DL framework vs. via ONNX?
6. How often do you encounter the following problems while using ONNX models? (Likert scale, with "Never/Rarely/Occasionally/Regularly)
    - Crashes (e.g., Model does not convert to ONNX.)
    - Performance Differences (e.g., the accuracy of the ONNX model does not match the original model)
    - Other (please specify)

7. When you encounter one of these problems, how do you address it?