CLAIMS

1. A method for process recipe creation comprising:

receiving, by a processing device, training input data associated with a process recipe related to electronic device manufacturing, the training input data comprising a set of experimental data related to the process recipe;

obtaining, by the processing device, target output data for the training input data, the target output data identifying a set of defect types; and

providing, by the processing device, the training input data and the target output data to train a set of machine learning models, wherein each machine learning model of the set of machine learning models is trained for identifying defect impact with respect to at least one defect type of the set of defect types.

2. The method of claim 1, further comprising converting, by the processor device, the training input data into defect model training data having a machine learning format for training the set of machine learning models.

3. The method of claim 1, further comprising:

receiving, by the processing device, an initially trained machine learning model from the set of machine learning models;

receiving, by the processing device, tuning input data; and

tuning, based on the tuning input data, the initially trained machine learning model to obtain a tuned machine learning model.

4. The method of claim 1, further comprising:

receiving, by the processing device, a selected machine learning model from the set of machine learning models;

receiving, as input to the selected machine learning model, data associated with the process recipe; and

obtaining an output by applying the data associated with the process recipe to the selected machine learning model, wherein the output is representative of the defect impact with respect to the at least one defect type.

5. The method of claim 4, wherein the data associated with the process recipe comprises a set of recipe settings for a process recipe, and wherein the output includes at least one of: an estimated defect count for the at least one defect type in view of the set of recipe settings, or a probability that the at least one defect type will impact performance in view of the recipe settings.

6. The method of claim 4, wherein:

the data associated with the process recipe comprises a set of recipe settings for a process recipe, and a set of constraints specifying an allowable range for each setting of the set of recipe settings; and

the output comprises a constrained set of recipe settings that minimizes at least one of: an estimated defect count for the at least one defect type in view of the set of recipe settings, or a probability that the at least one defect type will impact performance in view of the recipe settings.

7. The method of claim 4, wherein:

the data associated with the process recipe comprises a set of desired characteristics; and

the output comprises a set of recipe settings that achieves the set of desired characteristics while minimizing at least one of: an estimated defect count for the at least one defect type in view of the set of recipe settings, or a probability that the at least one defect type will impact performance in view of the recipe settings.

8. The method of claim 4, further comprising:

generating, by the processing device in view of the output, a process recipe for performing the process recipe that accounts for the defect impact with respect to the at least one defect type; and

causing, by the processing device, a process tool to perform the process using the process recipe.

9. A system comprising:

a memory and

a processing device, operatively coupled to the memory, to perform operations for process recipe creation comprising:

receiving, as input to a trained machine learning model for identifying defect impact with respect to at least one type defect type, data associated with a process recipe related to electronic device manufacturing, wherein the data associated with the process recipe comprises at least one of: an input set of recipe settings for processing a component, a set of desired characteristics to be achieved by processing the component, or a set of constraints specifying an allowable range for each setting of the set of recipe settings; and

obtaining an output by applying the data associated with the process recipe to the trained machine learning model, wherein the output is representative of the defect impact with respect to the at least one defect type.

10. The system of claim 9, wherein the output comprises at least one of: an estimated defect count for the at least one defect type in view of the set of recipe settings, or a probability that the at least one defect type will impact performance in view of the recipe settings.

11. The system of claim 9, wherein the output comprises an output set of recipe settings that minimizes at least one of: an estimated defect count for the at least one defect type in view of the set of recipe settings, or a probability that the at least one defect type will impact performance in view of the set of recipe settings.

12. The system of claim 11, wherein the operations further comprise generating a process recipe based on the output set of recipe settings for performing the process recipe that accounts for the defect impact with respect to the at least one defect type.

13. The system of claim 12, wherein the operations further comprise causing a process tool to perform an electronic device manufacturing process using the process recipe.

14. The system of claim 9, wherein the operations further comprise, prior to receiving the data, obtaining the trained machine learning model by training a machine learning model based on training input data and target output data, and wherein the training input data comprises a set of experimental data related to the process recipe.

15. A non-transitory machine-readable storage medium storing instructions which, when executed by a processing device, cause the processing device to perform operations for process recipe creation comprising:

receiving, as input to a trained machine learning model for identifying defect impact with respect to at least one type defect type, data associated with a process recipe related to electronic device manufacturing, wherein the data associated with the process recipe comprises at least one of: an input set of recipe settings for processing a component, a set of desired characteristics to be achieved by processing the component, or a set of constraints specifying an allowable range for each setting of the set of recipe settings; and

obtaining an output by applying the data associated with the process recipe to the trained machine learning model, wherein the output is representative of the defect impact with respect to the at least one defect type.

16. The non-transitory machine-readable storage medium of claim 15, wherein the output comprises at least one of: an estimated defect count for the at least one defect type in view of the set of recipe settings, or a probability that the at least one defect type will impact performance in view of the recipe settings.

17. The non-transitory machine-readable storage medium of claim 15, wherein the output comprises an output set of recipe settings that minimizes at least one of: an estimated defect count for the at least one defect type in view of the set of recipe settings, or a probability that the at least one defect type will impact performance in view of the set of recipe settings.

18. The non-transitory machine-readable storage medium of claim 17, wherein the operations further comprise generating a process recipe based on the output set of recipe settings for performing the process that accounts for the defect impact with respect to the at least one defect type.

19. The non-transitory machine-readable storage medium of claim 18, wherein the operations further comprise causing a process tool to perform a process using the process recipe.

20. The non-transitory machine-readable storage medium of claim 15, wherein the operations further comprise, prior to receiving the data, obtaining the trained machine learning

model by training a machine learning model based on training input data and target output data, and wherein the training input data comprises a set of experimental data related to the process recipe.