CLAIMS

1. A method comprising:

obtaining, by a processing device, one or more candidate process recipes each corresponding to a respective set of predicted processing parameters of one or more sets of predicted processing parameters that are determined to fail to satisfy each target property of a set of target properties for processing a component, wherein the one or more candidate process recipes each correspond to a set of predicted properties, the set of predicted properties comprising, for each feature associated with processing the component, a respective predicted property value resulting from processing the component;

selecting, by the processing device from the one or more candidate process recipes, a process recipe comprising a set of Pareto efficient processing parameters for processing the component; and

causing, by the processing device, the component to be processed by a process tool in accordance with the set of Pareto efficient processing parameters of the process recipe.

2. The method of claim 1, further comprising:

receiving, by the processing device, a set of feature models comprising a set of spatial multiple-input multiple-output (MIMO) models, each feature model of the set of feature models corresponding to a respective feature associated with processing of a component;

determining, by the processing device using the set of feature models, the one or more sets of predicted processing parameters based on the set of target properties; and

generating, by the processing device, the one or more candidate process recipes based on the one or more sets of predicted processing parameters, respectively.

3. The method of claim 2, wherein generating the one or more candidate process recipes comprises using numerical optimization to minimize a difference between a target property and a corresponding predicted property.

4. The method of claim 3, wherein generating the one or more candidate process recipes comprises:

obtaining a cost function based on the set of feature models and the set of target properties; and

minimizing the cost function to obtain each set of predicted properties.

5. The method of claim 1, further comprising:

receiving, by the processing device, an expected performance for processing the component using the process recipe, and an observed performance for processing the component using the process recipe;

determining, by the processing device, that a difference between the expected performance and the observed performance does not satisfy a threshold condition; and

generating, by the processing device, a new process recipe for processing the component based on the difference.

6. A system comprising:

a memory; and

a processing device coupled to the memory, the processing device to perform operations comprising:

obtaining one or more candidate process recipes each corresponding to a respective set of predicted processing parameters of one or more sets of predicted processing parameters that are determined to fail to satisfy each target property of a set of target properties for processing a component, wherein the one or more candidate process recipes each correspond to a set of predicted properties, the set of predicted properties comprising, for each feature, a respective predicted property value resulting from processing the component;

selecting, from the one or more candidate process recipes, a process recipe comprising a set of Pareto efficient processing parameters for processing the component; and

causing the component to be processed by a process tool in accordance with the set of Pareto efficient processing parameters of the process recipe.

7. The system of claim 6, wherein the operations further comprise:

receiving a set of feature models comprising a set of spatial multiple-input multiple-output (MIMO) models, each feature model of the set of feature models corresponding to a respective feature associated with processing of a component;

determining, using the set of feature models, the one or more sets of predicted processing parameters based on the set of target properties; and

generating the one or more candidate process recipes based on the one or more sets of predicted processing parameters, respectively.

8. The system of claim 7, wherein generating the one or more candidate process recipes comprises using numerical optimization to minimize a difference between a target property and a corresponding predicted property.

9. The system of claim 8, wherein generating the set of one or more candidate process recipes comprises:

obtaining a cost function based on the set of feature models and the set of target properties; and

minimizing the cost function to obtain each set of predicted properties.

10. The system of claim 6, wherein the operations further comprise:

receiving an expected performance for processing the component, and an observed performance for processing the component using the process recipe;

determining that a difference between the expected performance and the observed performance does not satisfy a threshold condition; and

generating a new process recipe for processing the component based on the difference.

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

obtaining one or more candidate process recipes each corresponding to a respective set of predicted processing parameters of one or more sets of predicted processing parameters that are determined to fail to satisfy each target property of a set of target properties for processing a component, wherein the one or more candidate process recipes each correspond to a set of predicted properties, the set of predicted properties comprising, for each feature, a respective predicted property value resulting from processing the component;

selecting, from the one or more candidate process recipes, a process recipe comprising a set of Pareto efficient processing parameters for processing the component; and

causing the component to be processed by a process tool in accordance with the set of Pareto efficient processing parameters of the process recipe.

12. The non-transitory machine-readable storage medium of claim 11, wherein the operations further comprise:

receiving a set of feature models comprising a set of spatial multiple-input multiple-output (MIMO) models, each feature model of the set of feature models corresponding to a respective feature associated with processing of a component;

determining, using the set of feature models, the one or more sets of predicted processing parameters based on the set of target properties; and

generating the one or more candidate process recipes based on the one or more sets of predicted processing parameters, respectively.

13. The non-transitory machine-readable storage medium of claim 12, wherein generating the one or more candidate process recipes comprises using numerical optimization to minimize a difference between a target property and a corresponding predicted property by:

obtaining a cost function based on the set of feature models and the set of target properties; and

minimizing the cost function to obtain each set of predicted properties.

14. The non-transitory machine-readable storage medium of claim 11, wherein the operations further comprise:

receiving an expected performance for processing the component, and an observed performance for processing the component using the process recipe;

determining that a difference between the expected performance and the observed performance does not satisfy a threshold condition; and

generating a new process recipe for processing the component based on the difference.