WHAT IS CLAIMED IS:

1. A computer-implemented method for generating encoding ladders that are used to stream media titles, the method comprising:

generating a first quality of experience term for a candidate encoding ladder based on a combination of a plurality of quality of experience levels for a plurality of encoded videos associated with the candidate encoding ladder;

generating a first cost term for the candidate encoding ladder based on a combination of a plurality of cost levels for the plurality of encoded videos;

generating a first objective function based on a first ladder configuration and a parameterized objective function that approximates a tradeoff between a weighted quality of experience for the candidate encoding ladder and a weighted cost term for the candidate encoding ladder, wherein the weighted quality of experience is determined by weighting the first quality of experience term for the candidate encoding ladder using a quality term weight, and the weighted cost term is determined by weighting the first cost term for the candidate encoding ladder using a cost term weight that is different from the quality term weight;

generating a first plurality of constraints based on the first ladder configuration and a plurality of parameterized constraints; and

executing a constrained optimization algorithm on the first objective function, the first plurality of constraints, and encoding point metadata associated with a set of encoded videos to generate a first candidate encoding ladder for a media title.

2. The computer-implemented method of claim 1, wherein generating the first objective function comprises replacing a first parameter that is included in the parameterized objective function with a rung count specified in the first ladder configuration.

3. The computer-implemented method of claim 1, wherein generating the first objective function comprises replacing one or more parameters included in the parameterized objective function with one or

more parameter values that indicate a relative importance of the weighted quality of experience and the weighted cost term associated with the candidate encoding ladder.

4. The computer-implemented method of claim 1, wherein generating the first plurality of constraints comprises replacing one or more parameters included in the first plurality of constraints with at least one of a rung count, a footprint upper bound, a high quality score, a minimum quality spacing, a maximum quality spacing, a low bitrate, or a relative bitrate spacing.

5. The computer-implemented method of claim 1, further comprising determining different sets of parameter values for a union of a first set of parameters included in the parameterized objective function and a second set of parameters included in the plurality of parameterized constraints to generate the first ladder configuration and at least one other ladder configuration.

6. The computer-implemented method of claim 1, wherein the encoding point metadata includes at least one of a set of resolutions, a set of quality scores, a set of bitrates, a set of normalized quality scores, or a set of normalized bitrates that are associated with the set of encoded videos.

7. The computer-implemented method of claim 6, further comprising normalizing the set of bitrates and the set of quality scores to a common range to generate the set of normalized bitrates and the set of normalized quality scores.

8. The computer-implemented method of claim 1, wherein a term included in the parameterized objective function comprises a weighted average of a subset of a set of normalized quality scores associated with the set of encoded videos.

9. The computer-implemented method of claim 1, wherein the weighted cost term is associated with at least one of a storage footprint or a network bandwidth consumption.

10. The computer-implemented method of claim 1, wherein executing the constrained optimization algorithm comprises generating an assignment matrix specifying a plurality of assignments between the set of encoded videos and a plurality of rungs to be included in the first candidate encoding ladder.

11. One or more non-transitory computer readable media including instructions that, when executed by one or more processors, cause the one or more processors to generate encoding ladders that are used to stream media titles by performing the steps of:

generating a first quality of experience term for a candidate encoding ladder based on a combination of a plurality of quality of experience levels for a plurality of encoded videos associated with the candidate encoding ladder;

generating a first cost term for the candidate encoding ladder based on a combination of a plurality of cost levels for the plurality of encoded videos;

generating a first objective function based on a first ladder configuration and a parameterized objective function that approximates a tradeoff between a weighted quality of experience for the candidate encoding ladder and a weighted cost term for the candidate encoding ladder, wherein the weighted quality of experience is determined by weighting the first quality of experience term for the candidate encoding ladder using a quality term weight, and the weighted cost term is determined by weighting the first cost term for the candidate encoding ladder using a cost term weight that is different from the quality term weight;

generating a first plurality of constraints based on the first ladder configuration and a plurality of parameterized constraints; and

executing a constrained optimization algorithm on the first objective function, the first plurality of constraints, and encoding point metadata associated with a set of encoded videos to generate a first candidate encoding ladder for a media title.

12. The one or more non-transitory computer readable media of claim 11, wherein generating the first objective function comprises replacing a first parameter that is

included in the parameterized objective function with a rung count specified in the first ladder configuration.

13. The one or more non-transitory computer readable media of claim 11, wherein generating the first objective function comprises computing a plurality of values for a plurality of weights based on the first ladder configuration, wherein the plurality of weights are referenced by the first objective function and are associated with a plurality of rungs.

14. The one or more non-transitory computer readable media of claim 11, wherein generating the first plurality of constraints comprises replacing one or more parameters included in the first plurality of constraints with at least one of a rung count, a footprint upper bound, a high quality score, a minimum quality spacing, a maximum quality spacing, a low bitrate, or a relative bitrate spacing.

15. The one or more non-transitory computer readable media of claim 11, wherein the steps further include determining different sets of parameter values for a union of a first set of parameters included in the parameterized objective function and a second set of parameters included in the plurality of parameterized constraints to generate the first ladder configuration and at least one other ladder configuration.

16. The one or more non-transitory computer readable media of claim 11, wherein the encoding point metadata includes at least one of a set of resolutions, a set of quality scores, a set of bitrates, a set of normalized quality scores, or a set of normalized bitrates that are associated with the set of encoded videos.

17. The one or more non-transitory computer readable media of claim 11, wherein a term included in the parameterized objective function comprises a sum of a subset of a set of normalized bitrates associated with the set of encoded videos.

18. The one or more non-transitory computer readable media of claim 11, wherein the first plurality of constraints comprises at least one constraint associated with at least one resolution that the candidate encoding ladder represents.

19. The one or more non-transitory computer readable media of claim 11, wherein the steps further include:

generating a second objective function based on a second ladder configuration and the parameterized objective function;

generating a second plurality of constraints based on the second ladder configuration and the plurality of parameterized constraints; and

executing the constrained optimization algorithm on the second objective function, the second plurality of constraints, and the encoding point metadata to generate a second candidate encoding ladder for the media title.

20. A system comprising:

one or more memories storing instructions; and

one or more processors coupled to the one or more memories that, when executing the instructions, perform the steps of:

generating a first quality of experience term for a candidate encoding ladder based on a combination of a plurality of quality of experience levels for a plurality of encoded videos associated with the candidate encoding ladder;

generating a first cost term for the candidate encoding ladder based on a combination of a plurality of cost levels for the plurality of encoded videos:

generating a first objective function based on a first ladder configuration and a parameterized objective function that approximates a tradeoff between a weighted quality of experience for the candidate encoding ladder and a weighted cost term for the candidate encoding ladder, wherein the weighted quality of experience is determined by weighting the first quality of experience term for the candidate encoding ladder using a quality term weight, and the weighted cost term is determined by weighting the first cost term for the candidate encoding ladder using a cost term weight that is different from the quality term weight;

generating a first plurality of constraints based on the first ladder

configuration and a plurality of parameterized constraints; and

executing a constrained optimization algorithm on the first objective function, the first plurality of constraints, and encoding point metadata associated with a set of encoded videos to generate a first candidate encoding ladder for a media title.

21. The computer-implemented method of claim 1, wherein generating the first quality of experience term comprises determining a weighted combination of the plurality of quality of experience terms by applying a plurality of weighting factors to the plurality of quality of experience terms, wherein the quality term weight is different from the plurality of weighting factors.