

ALP-GMM [Portelas et al. 2019]

- Absolute Learning Progress Gaussian Mixture Model
 - Absolute Learning Progress is a metric

$$alp_{new} = |r_{new} - r_{old}|$$
 - Where p_{new} and p_{old} are close in parameter space
 - Based on last $n = 250$ pairs of (p, alp) compute GMM
- Then sample Task from GMM and train the agent

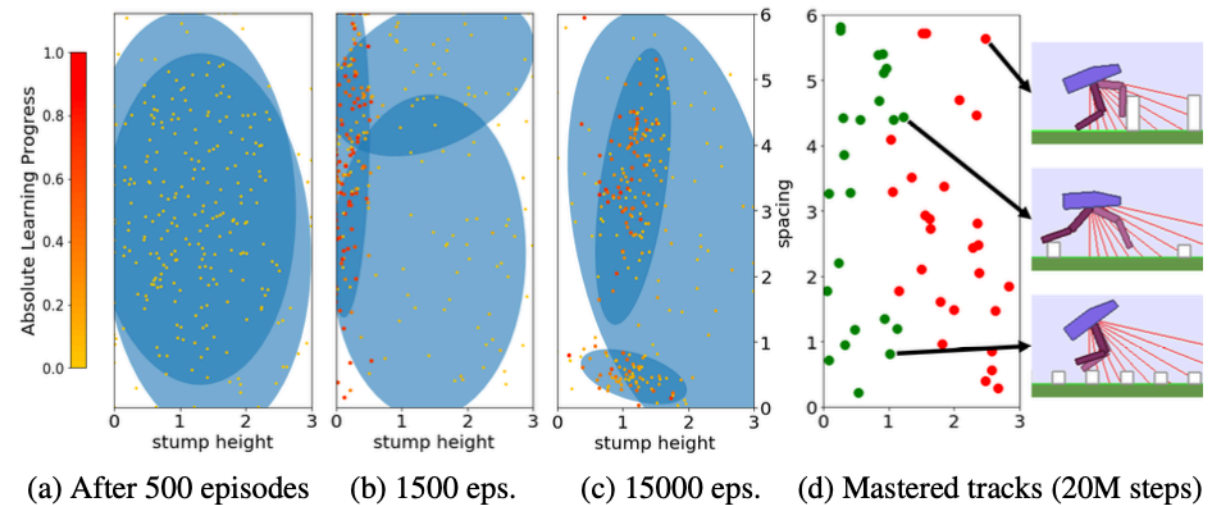


Figure 2: **Example of an ALP-GMM teacher paired with a Soft Actor-Critic student on Stump Tracks.** Figures (a)-(c) show the evolution of ALP-GMM parameter sampling in a representative run. Each dot represents a sampled track distribution and is colored according to its Absolute Learning Progress value. After initial progress on the leftmost part of the space, as in (b), most ALP-GMM runs end up improving on track distributions with 1 to 1.8 stump height, with the highest ones usually paired with spacing above 2.5 or below 1, indicating that tracks with large or very low spacing are easier than those in $[1, 2.5]$. Figure (d) shows for the same run which track distributions of the test set are mastered (i.e. $r_t > 230$, shown by green dots) after 17k episodes.

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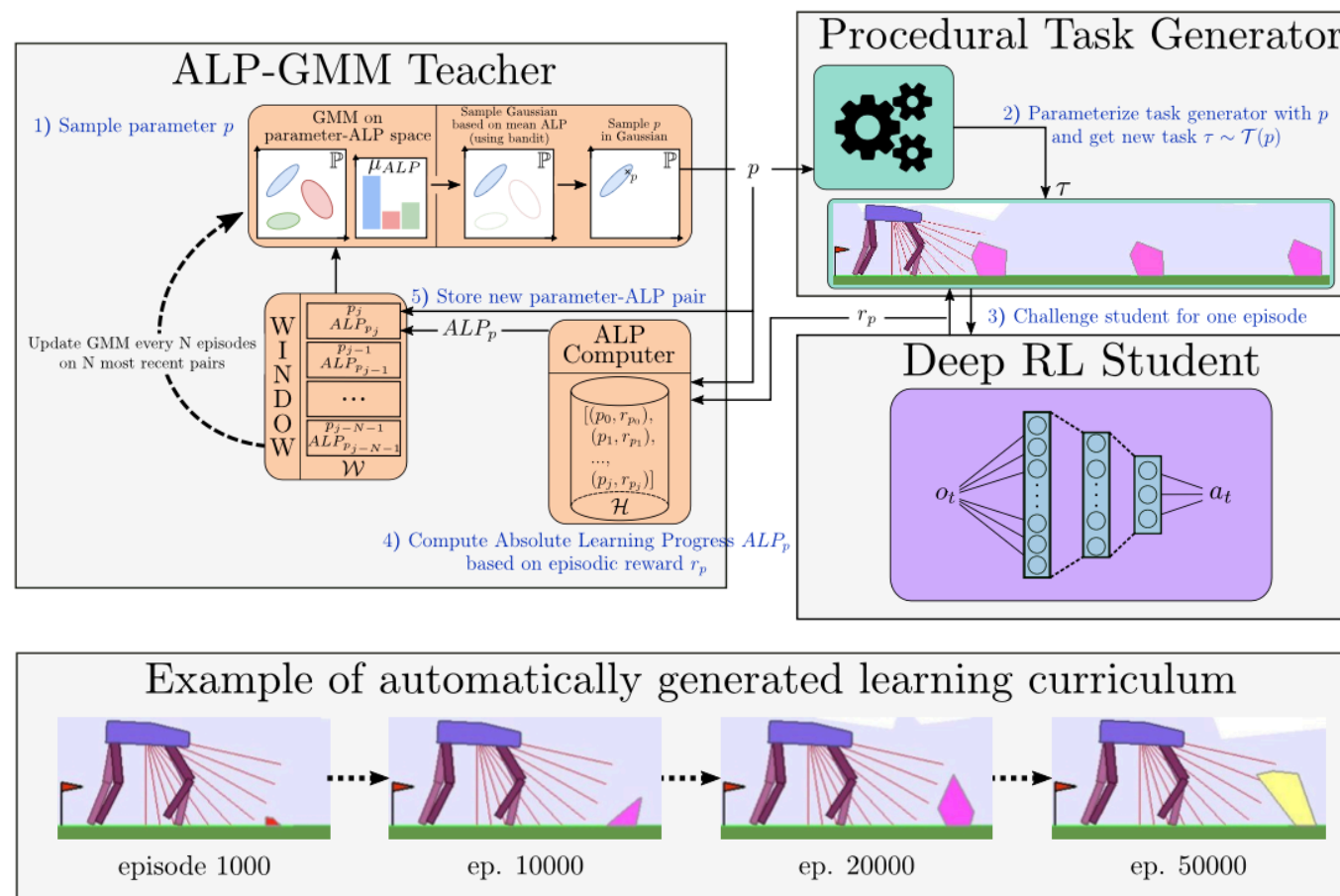


Figure 6: Schematic view of an ALP-GMM teacher's workflow