Readiness in Real-Time

Using cognitive science and AI to predict human capability

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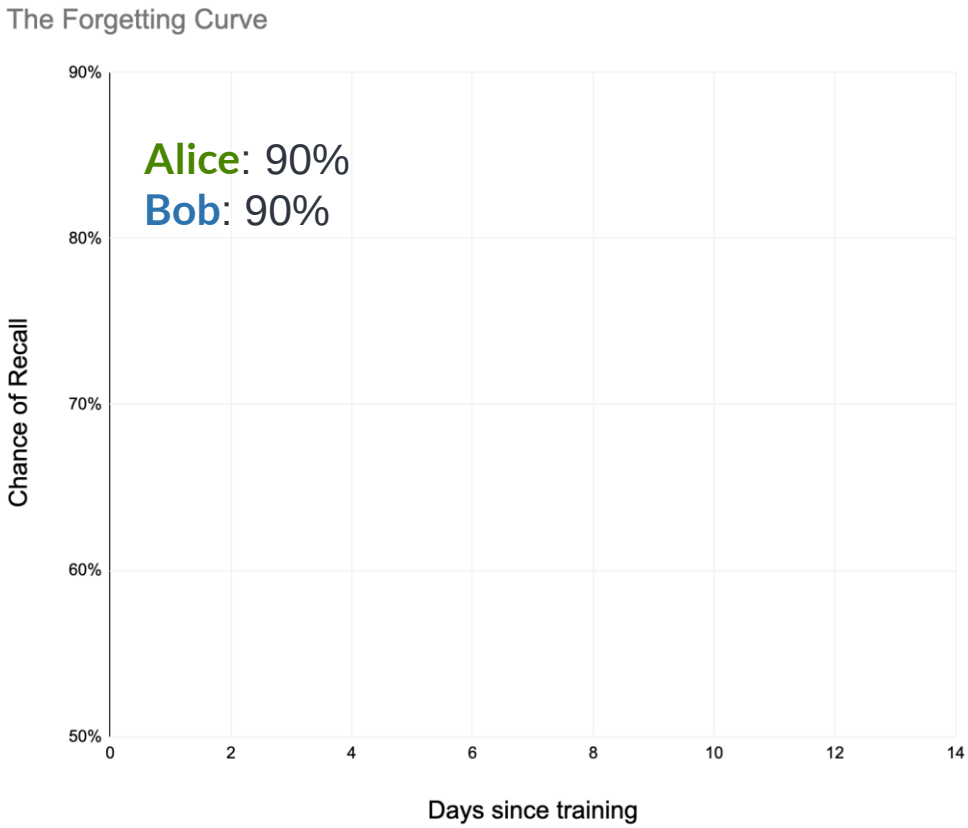
Forgetting is the key to learning.

Alice & **Bob** both take an exam after training, and both score 90%.



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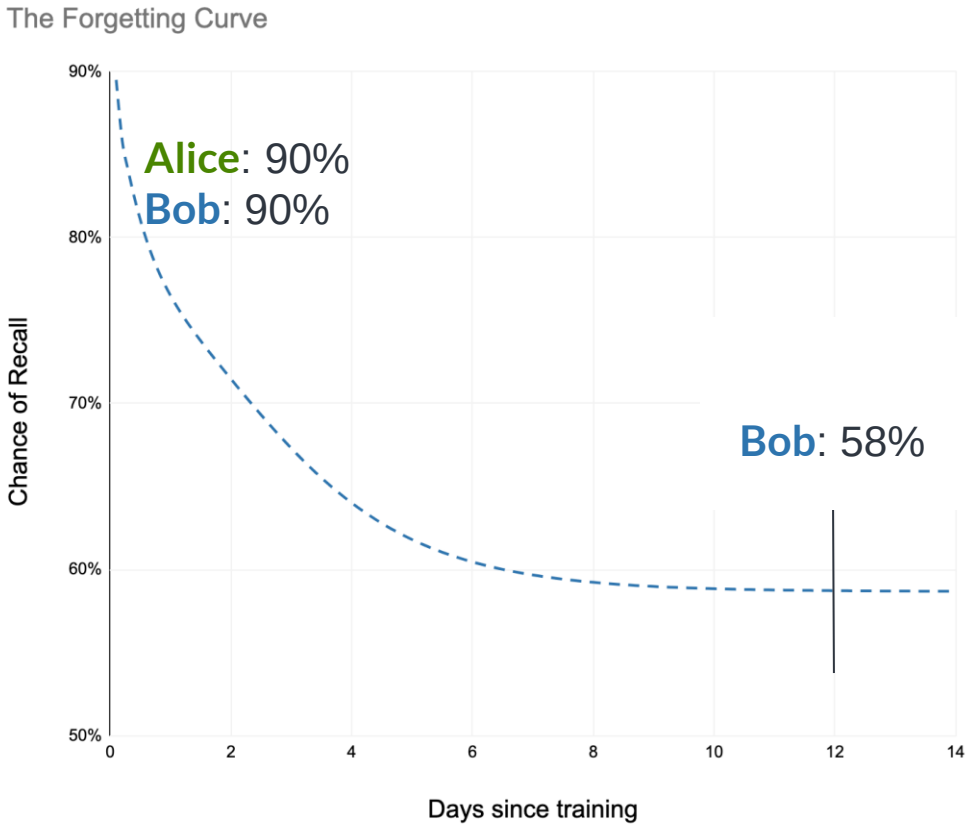
The more time passed since training, the less fresh it is.

Bob shows a typical forgetting curve, his memory for the material fades without reinforcement.



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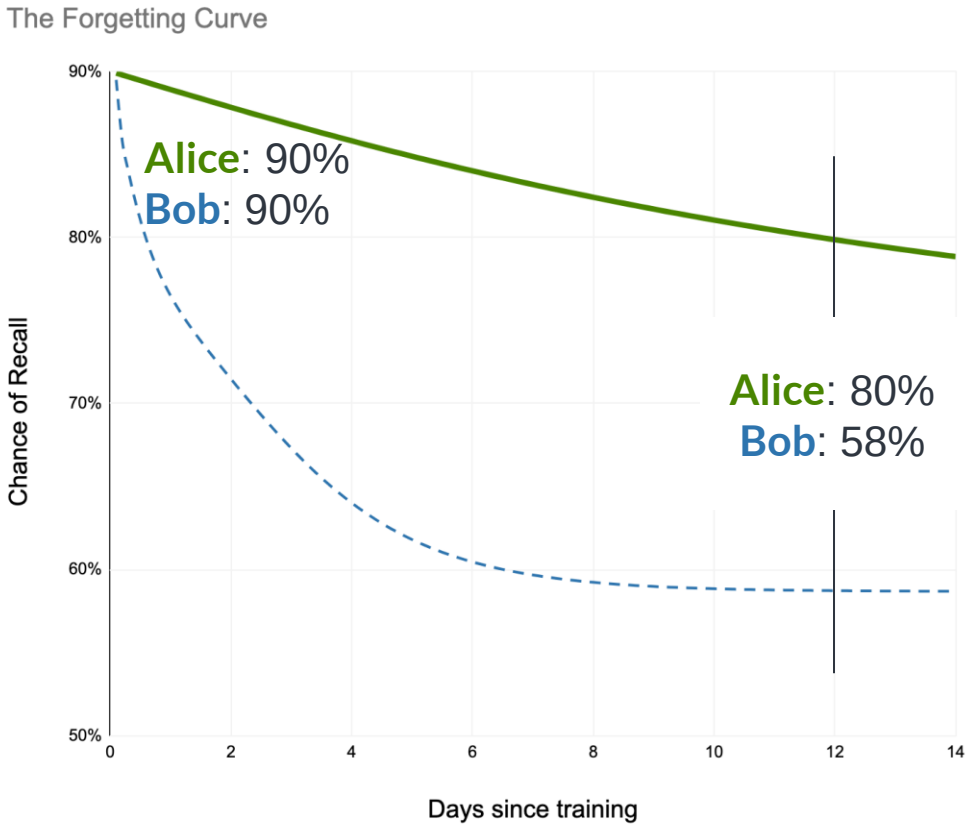
In contrast, **Alice** built strong **retention** for the material, and can recall far more two weeks later.

We can't test people daily, so knowing this trajectory is crucial.



Readiness

A Virtual Test Score

What does Cerego's Readiness score actually measure?

The chance you will be able to remember a specific concept at a specific moment in time.

Think of it as being able to give anyone a **virtual test on any concept at any time**.

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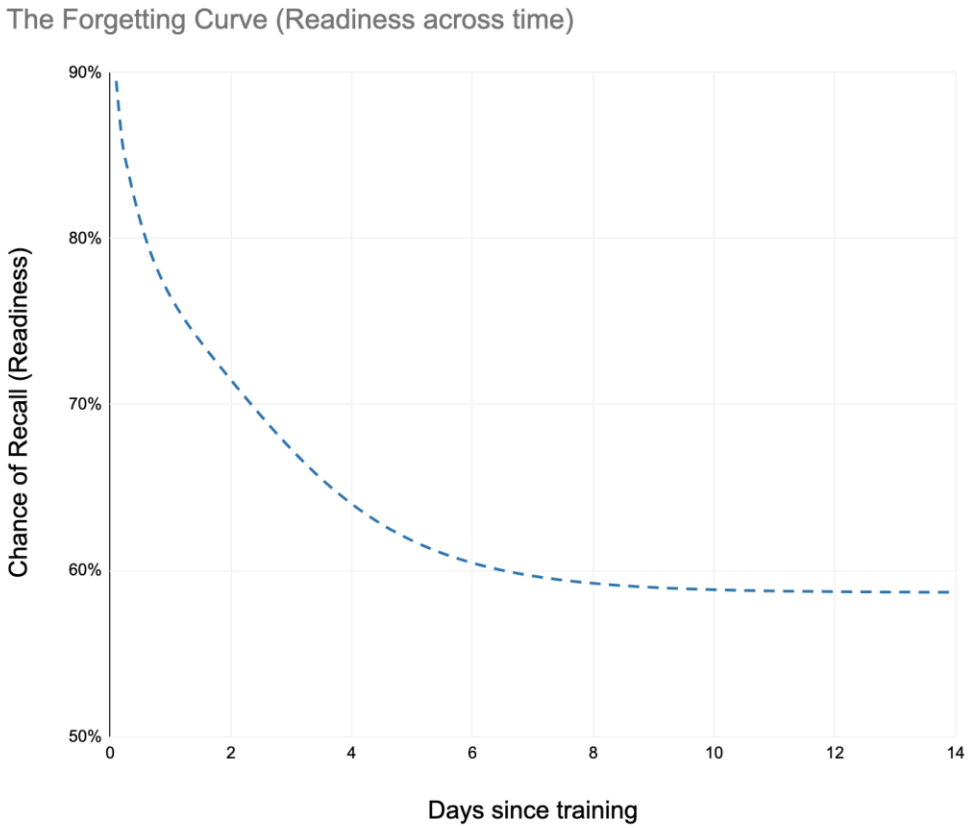
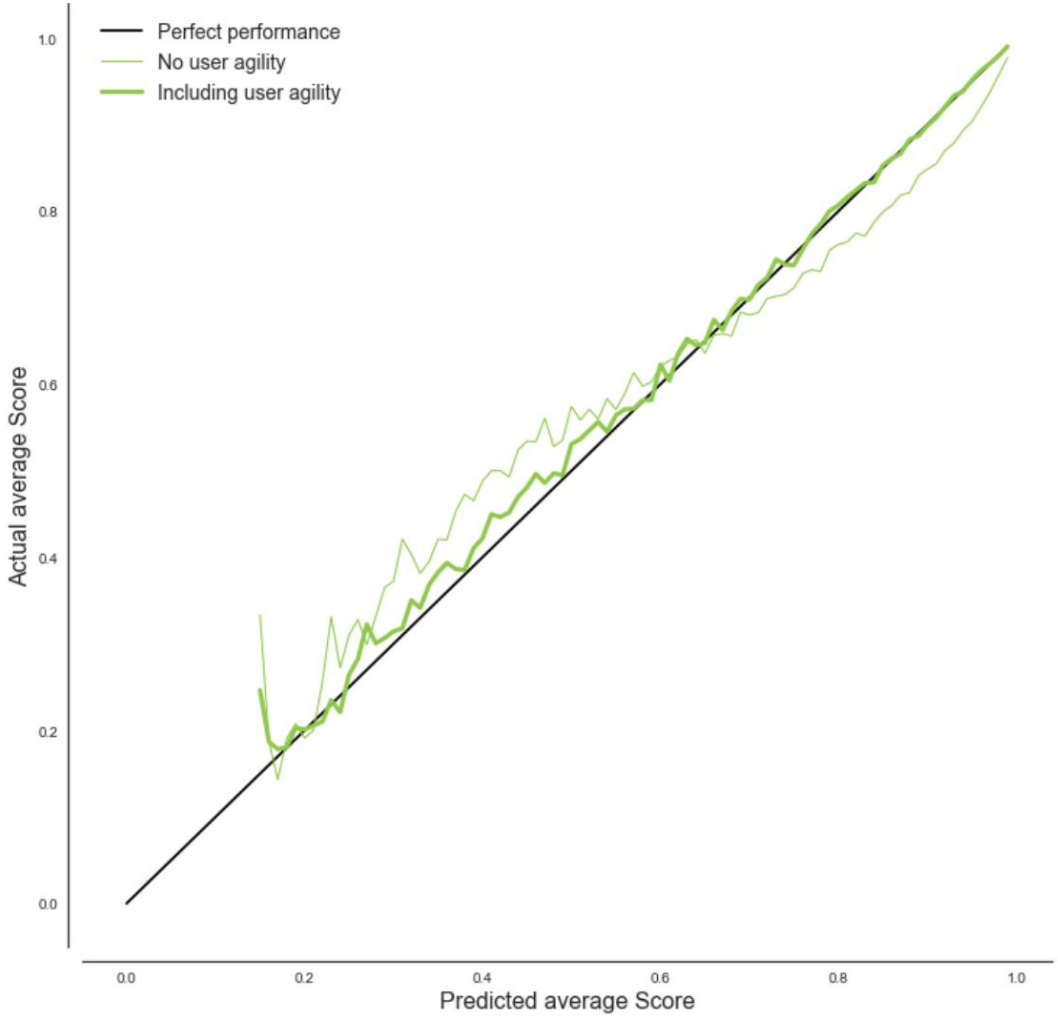
Cerego predicts this readiness curve into the future for each **individual memory**.

Closely resembles a **power decay** function.





Readiness model is trained on 1bn+ outcomes over 5+ years, and is well calibrated.

Expected calibration error (ECE) = 0.52%

Taken from Cerego Insights: Measuring Learning and Potential. Available at: https://www.cerego.com/resources/cerego-for-admins

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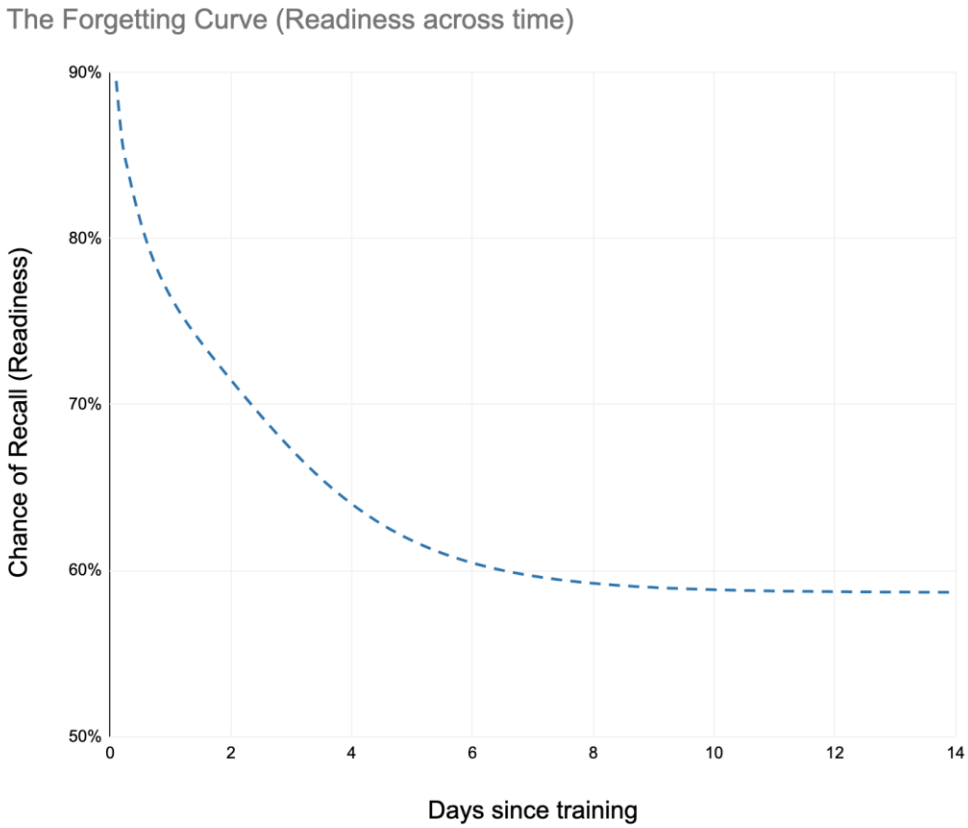
Determined by:

- Quiz Difficulty
- Concept Difficulty
- Learning history
- Memory **Retention**
- Learner **Agility**



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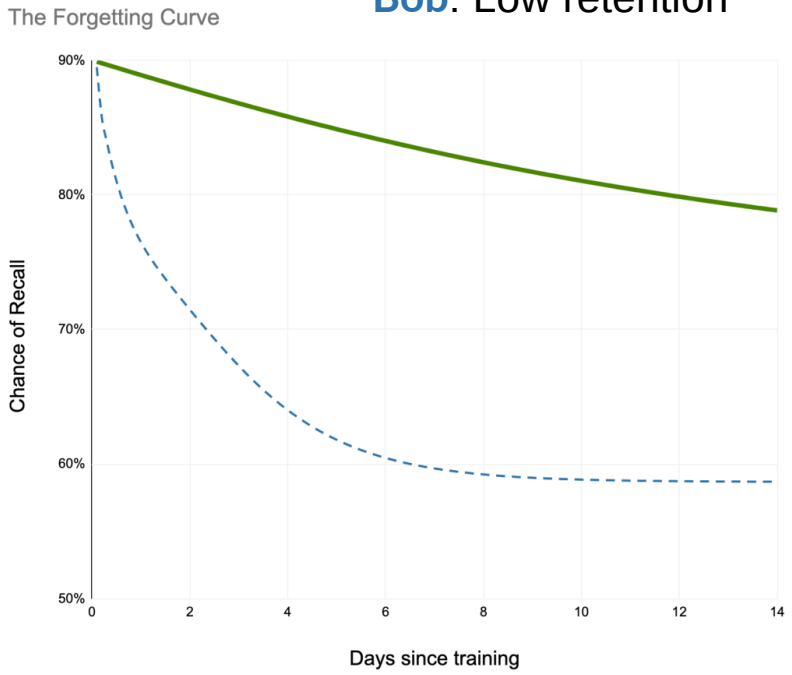
Retention

The rate of decay of an individual memory

Alice: High retention
Bob: Low retention



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Agility

How quickly an individual learns new information, and how slowly that decays

Learners with high agility tend to build strong retention from fewer interactions.

Statistically significant but consistent across content. A high agility learner will tend to outperform the predictions of our readiness model if it does not take their agility into account.

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Readiness

Who can recall their training right now, or on some future date?

Retention

How well learned is this content, and how long will it actually last?

Agility

Who are the sharpest, most adaptive learners in my organization?

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Case Studies

(All available on request: iharlow@cerego.com)

Consistent picture:

Agility & **Retention** predict future outcomes more accurately than post-tests do.

Retention is more predictive the further into the future the outcome is measured.

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Case Study 1:

African Leadership University Admissions

Agility & **Retention** measured in the first, online **screening** stage of admissions significantly predicted success at the **in-person** finalist day.

Applicants scoring above-average on **Agility** and **Retention** were accepted at a 2.7x higher rate than those scoring below-average.

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Case Study 2:

DAU Cybersecurity Training Pilot

Agility & **Retention** measured during training significantly predicted which learners actually retained their training 80 days later.

Almost all students achieved a passing grade at the end of the course, but only **29%** of controls scored above a passing grade 80 days later (vs **100%** of high **Agility** / **Retention** learners).

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Case Study 3:

Global Threat Mitigation Program (joint Cerego/BAH)

Agility & **Retention** during training significantly predicted performance 5 weeks later.

Agility & **Retention** predicted later performance (adj. R^2=.621) better than a post-test (adj. R^2=.529) *despite the fact the post-test and follow-up performance test used the same questions*.

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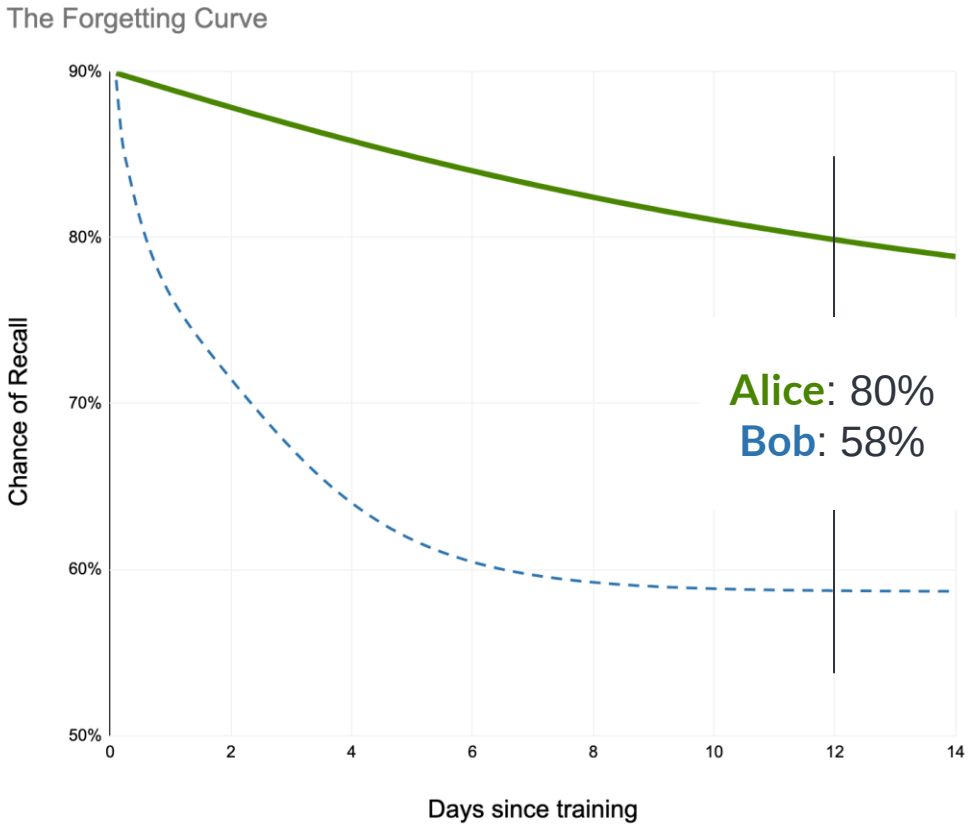
It is possible, today, to accurately predict readiness from an individual's learning history.



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