## How the Final ATS Score is Calculated

The ATS score is computed in ats\_score\_dynamic() in ats\_scoring.py using this formula:

**Final Score=(sim\_weight×semantic\_similarity)+(key\_weight×keyword\_overlap)**

**semantic\_similarity** = SBERT cosine similarity between cleaned resume text and JD text (range 0.0 to 1.0)

**keyword\_overlap** = Count of matched skills ÷ Count of JD skills (range 0.0 to 1.0)

**sim\_weight & key\_weight** are both fixed at 0.5, giving equal importance to semantic and keyword overlap.

## Strictness Factor

Before applying the formula, an extra step applies:

If overlap==0:

semantic\_similarity=semantic\_similarity×strictness\_factor

Where strictness\_factor defaults to 0.5, reducing the semantic similarity score if no skills are matched at all (i.e., keyword overlap is zero).

## Experience Gap Penalty

After calculating the final score above, an additional penalty is applied if the resume's years of experience (YOE) is less than the JD's required YOE:

if resume\_YOE<JD\_requirement⟹ Final Score=Final Score×0.6

This represents a **40% reduction** to penalize candidates who do not meet the minimum experience requirement.

## Step-by-Step Example

Semantic similarity = 0.60

Keyword overlap = 0.25

Weights: sim\_weight = 0.5, key\_weight = 0.5

**Case 1 – Some skills match:**

Final Score=(0.5×0.60)+(0.5×0.25)=0.30+0.125=0.425→42.5%

**Case 2 – No skills match (strictness penalty applies):**

Strictness penalty: 0.60×0.5=0.30 Final Score=(0.5×0.30)+(0.5×0.0)=0.15+0=0.15→15%

**Case 3 – Experience gap penalty:**

If JD requires 10+ YOE but resume shows 2 years:

Final Score after experience gap penalty=0.425×0.6=0.255→25.5%

## Output Bundle from ats\_score\_dynamic()

Final ATS score (0–100)

* Dictionary including:
* similarity → final semantic similarity (after strictness penalty if applicable)
* keyword\_overlap → fraction of JD skills in resume
* strictness\_factor\_applied → True/False
* Lists of matched skills, missing skills, JD skills (for explanations)

These outputs feed into:

* explain\_ats\_score() → human-readable score breakdown
* get\_recommendations() → recruiter advice summary

## Bottom line:

ATS score blends **50% semantic similarity** and **50% skill keyword overlap**, with:

A **penalty when there are no matched skills** (strictness factor), and

An additional **40% penalty when experience gap is detected**.