Learning Signatures of Good Writing — Final Report

Final narrative, illustrations, and generated snippets

Executive Summary

Great prose and poetry ride a cadence: mostly focused choices, punctuated by purposeful spikes of surprise that turn the scene or idea, followed by a short cooldown that grounds what just happened. Spikes align with content words and rhetorical pivots (not punctuation), with larger sustained shifts every few sentences or lines. Our analysis measured token-level distributions (p_true, entropy, rank, nucleus width), cadence statistics (spike rate, inter-peak intervals, cooldown entropy drop), cohesion (order vs shuffled), and token-class contexts. We then built a cadence-aware sampler (HF + MLX) that enforces per-phase top_p/temperature, content-aware spikes, cooldowns, and optional rhyme/line nudges.

Principles

- Cadence, not chaos: base focus → spike → cooldown → repeat - Spike on content pivots; defer punctuation/newline - Sustained shifts every 1–3 lines/sentences - Order matters: negative cohesion delta (original > shuffled) - Genre dials: denser spikes for poetry; gentler cadence for prose

Signatures Confusion Matrix

Author classification (chunk-level) — confusion matrix

True \ Predicted	Alfred Lord Tennyson	Edgar Allan Poe	Ernest Hemingway	F Scott Fitzgerald	Guy De Maupassant	Henry Wadsworth Longfellow	John Keats	Kate Chopin	Mark Twain	O Henry	Oscar Wilde	P G Wodehouse	Robert Burns	Rudyard Kipling	Saki	Samuel Taylor Coleridge	Thomas Gray
Alfred Lord Tennyson	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Edgar Allan Poe	0	0	0	0	0	0	0	1	0	0	0	2	0	0	1	1	1
Ernest Hemingway	0	0	87	4	8	3	0	3	12	1	1	3	0	3	13	4	4
F Scott Fitzgerald	0	0	6	0	5	0	0	0	15	4	0	2	0	1	11	2	1
Guy De Maupassant	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0
Henry Wadsworth Longfellow	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
John Keats	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0
Kate Chopin	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
Mark Twain	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
O Henry	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0
Oscar Wilde	0	0	0	0	0	1	0	0	0	0	3	0	0	0	0	0	0
P G Wodehouse	0	1	0	15	4	4	0	0	14	6	5	0	4	2	15	0	2
Robert Burns	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Rudyard Kipling	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
Saki	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Samuel Taylor Coleridge	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Thomas Gray	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

classification confusion matrix

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Alfred Lord Tennyson	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Edgar Allan Poe	2	0	1	0	1	1	0	2	1	0	0	0	0	0	0	0	0
Ernest Hemingway	5	5	132	1	4	0	0	10	1	13	6	0	0	1	6	0	0
F Scott Fitzgerald	7	3	3	0	0	0	5	0	4	7	0	11	0	5	3	2	5
Guy De Maupassant	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
Henry Wadsworth Longfellow	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
John Keats	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0
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O Henry	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
Oscar Wilde	0	0	0	0	1	0	0	1	0	0	2	0	0	0	0	0	0
P G Wodehouse	2	1	3	38	1	1	5	1	5	2	0	0	0	12	1	4	3
Robert Burns	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Rudyard Kipling	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
Saki	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Samuel Taylor Coleridge	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Thomas Gray	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0

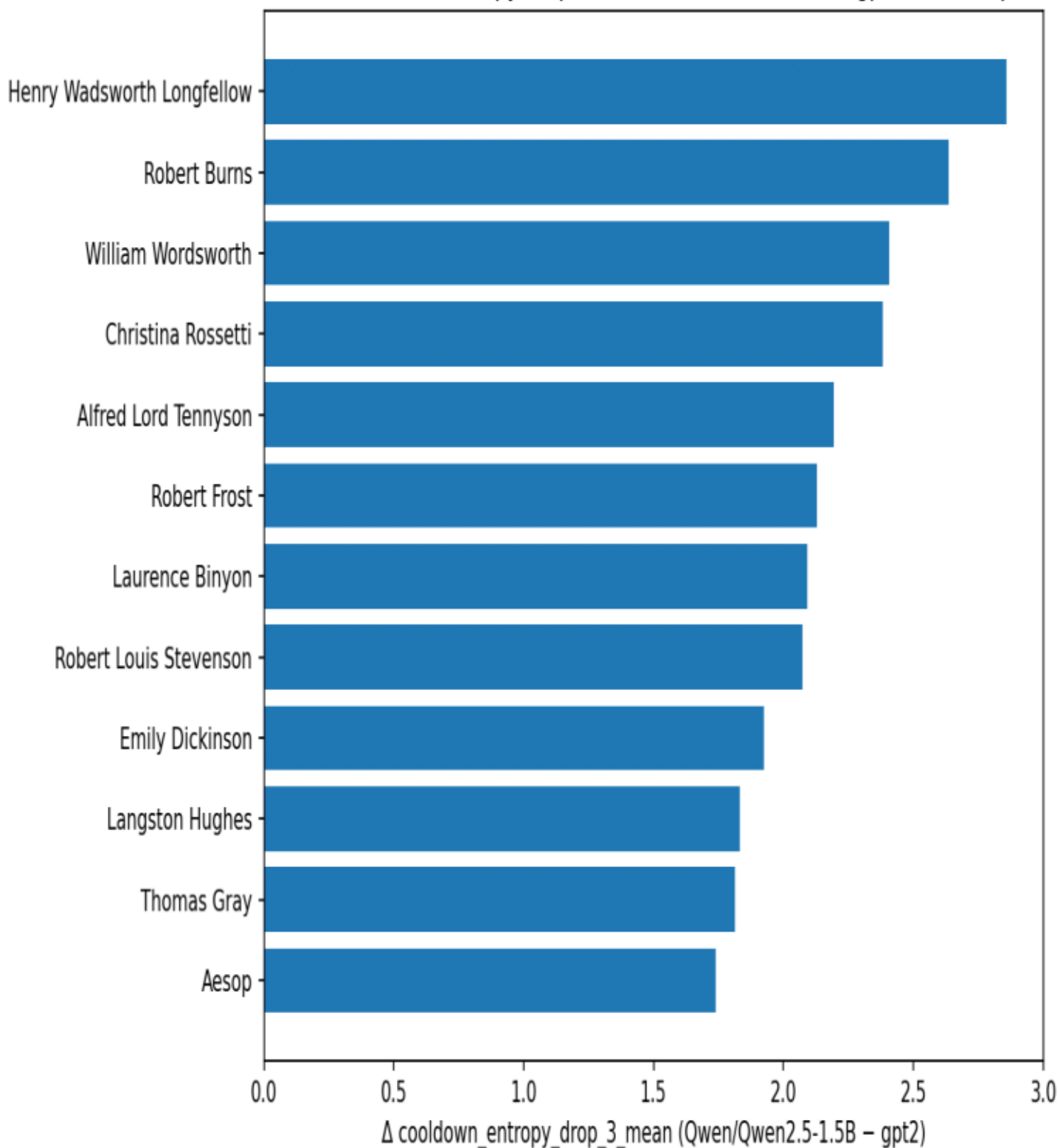True (y-axis), Predicted (x-axis)

classification Confusion Matrix

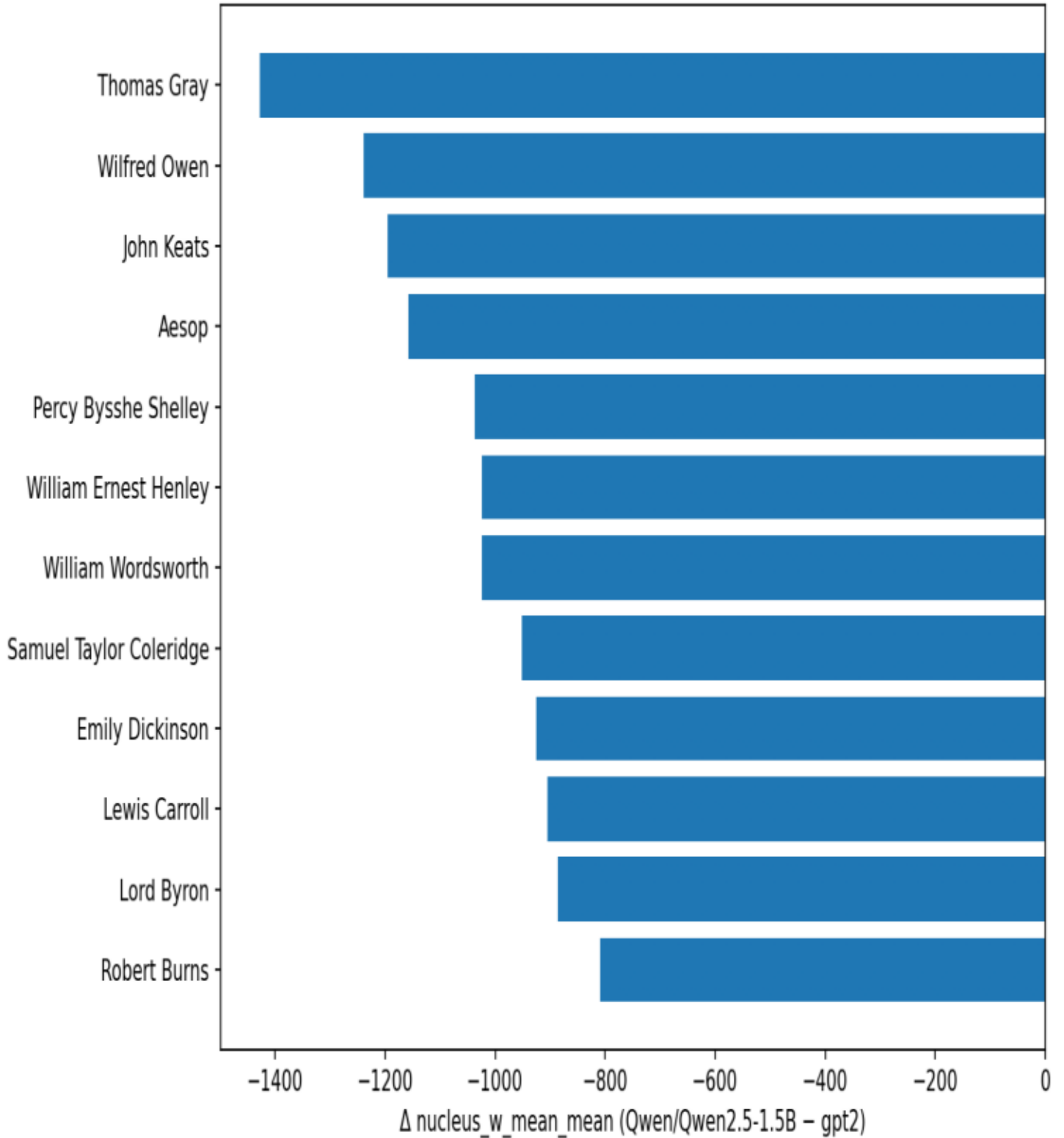Authors: Δ surprisal mean (Qwen/Qwen2.5-1.5B − gpt2) — most negative
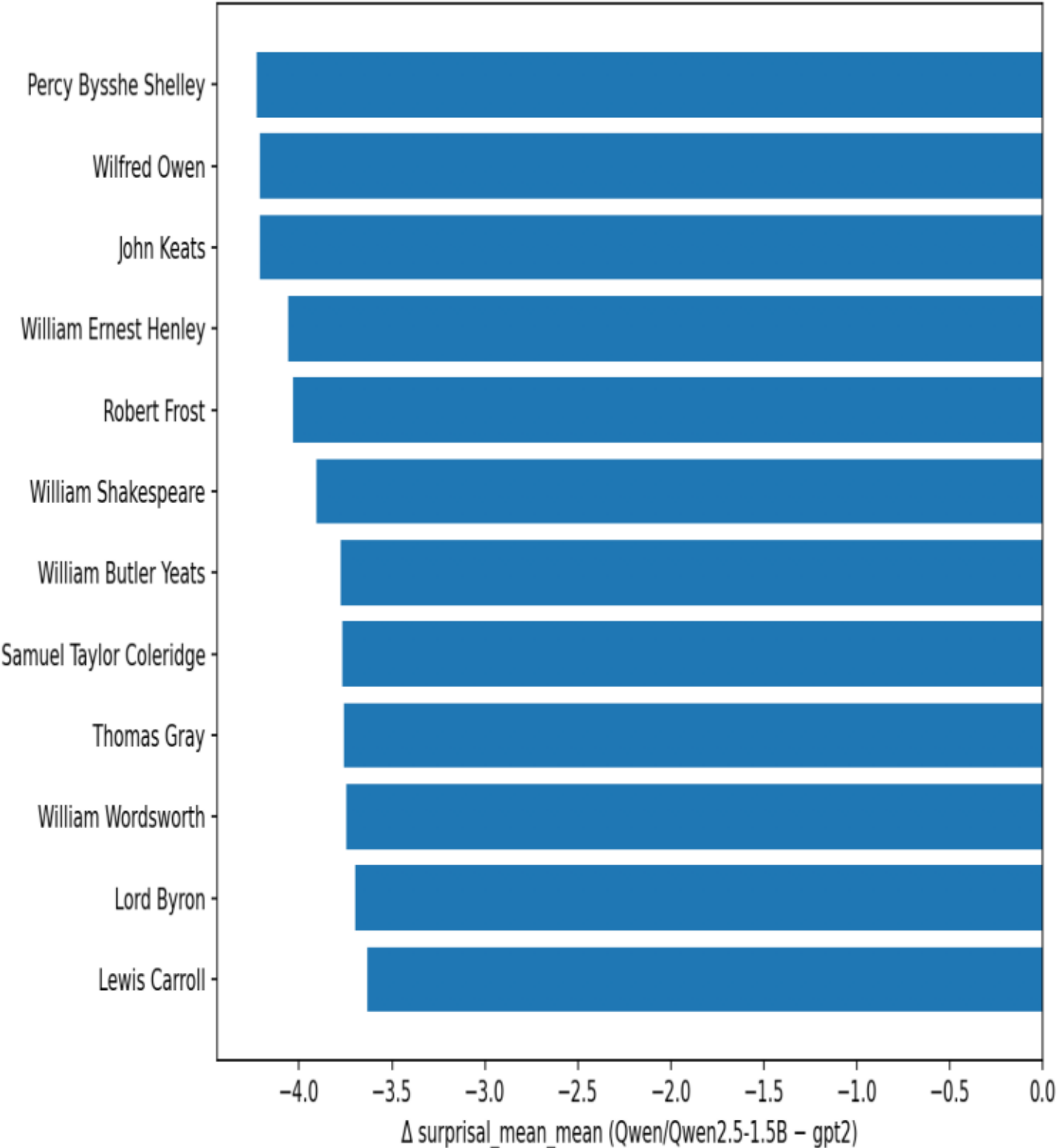
authors delta surprisal mean mean

Authors: Δ cooldown entropy drop (3) (Qwen/Qwen2.5-1.5B − gpt2) — most positive
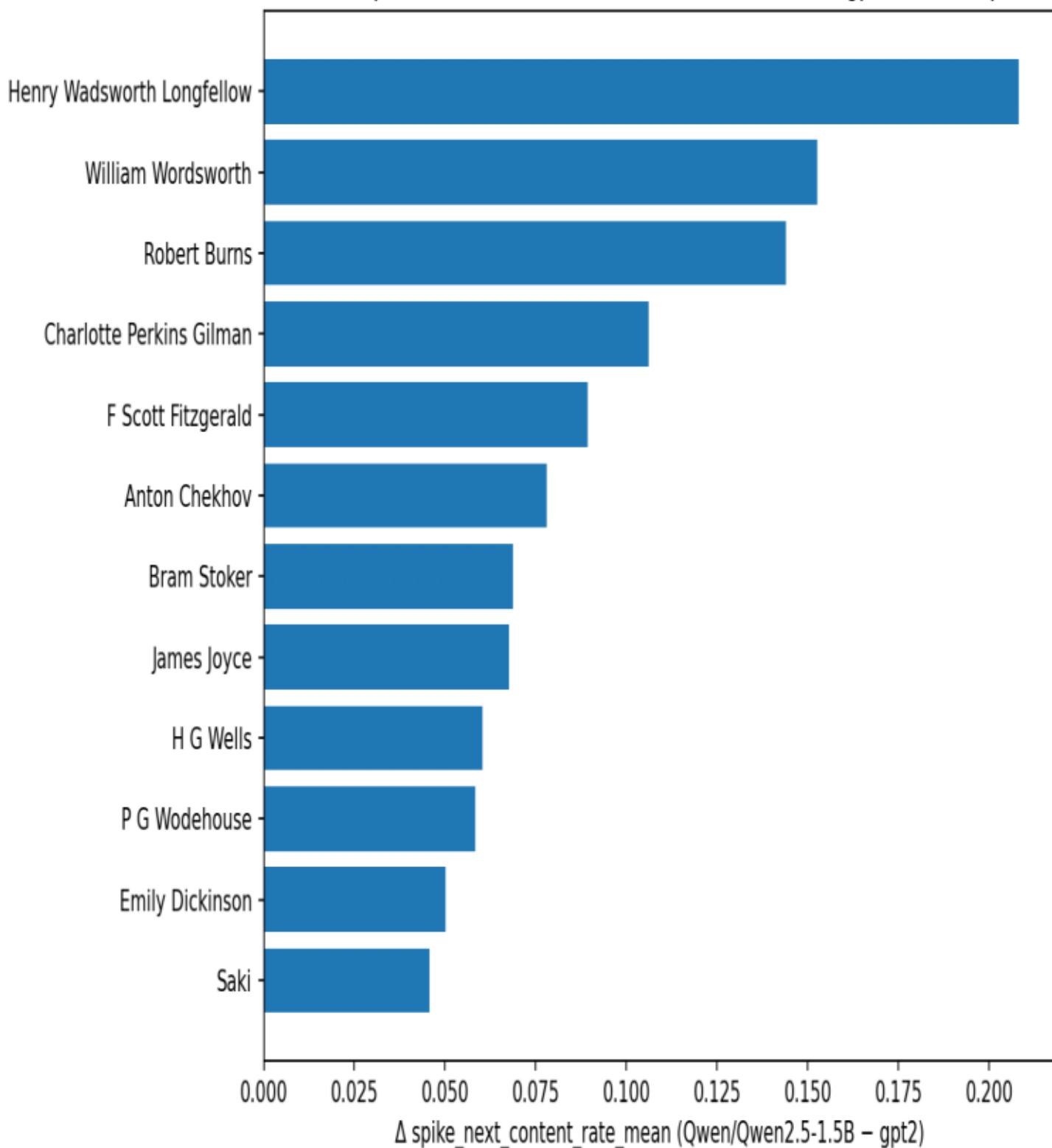
authors delta cooldown entropy drop 3 mean

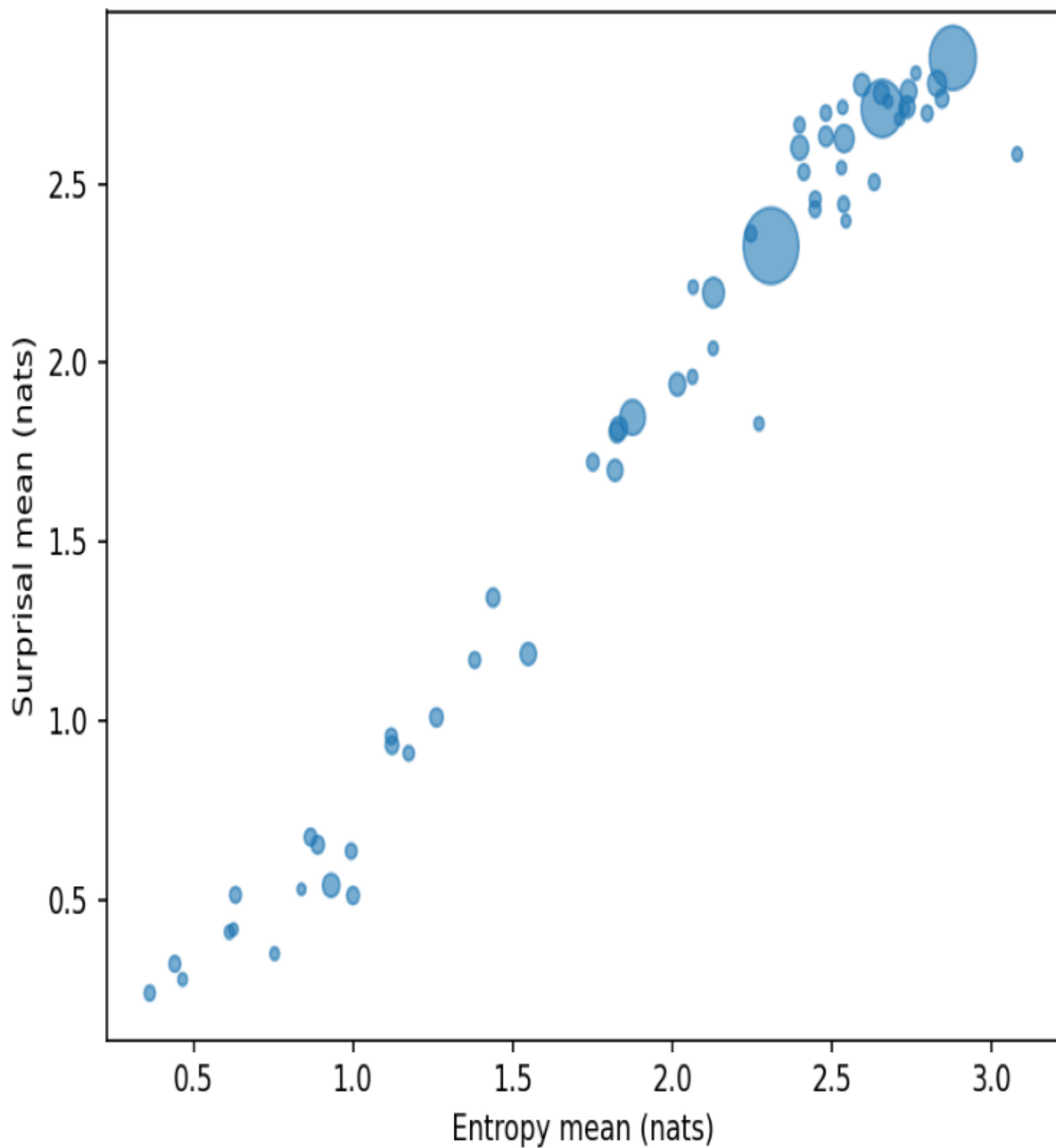Authors: Δ nucleus width (Qwen/Qwen2.5-1.5B − gpt2) — most negative

authors delta nucleus w mean mean

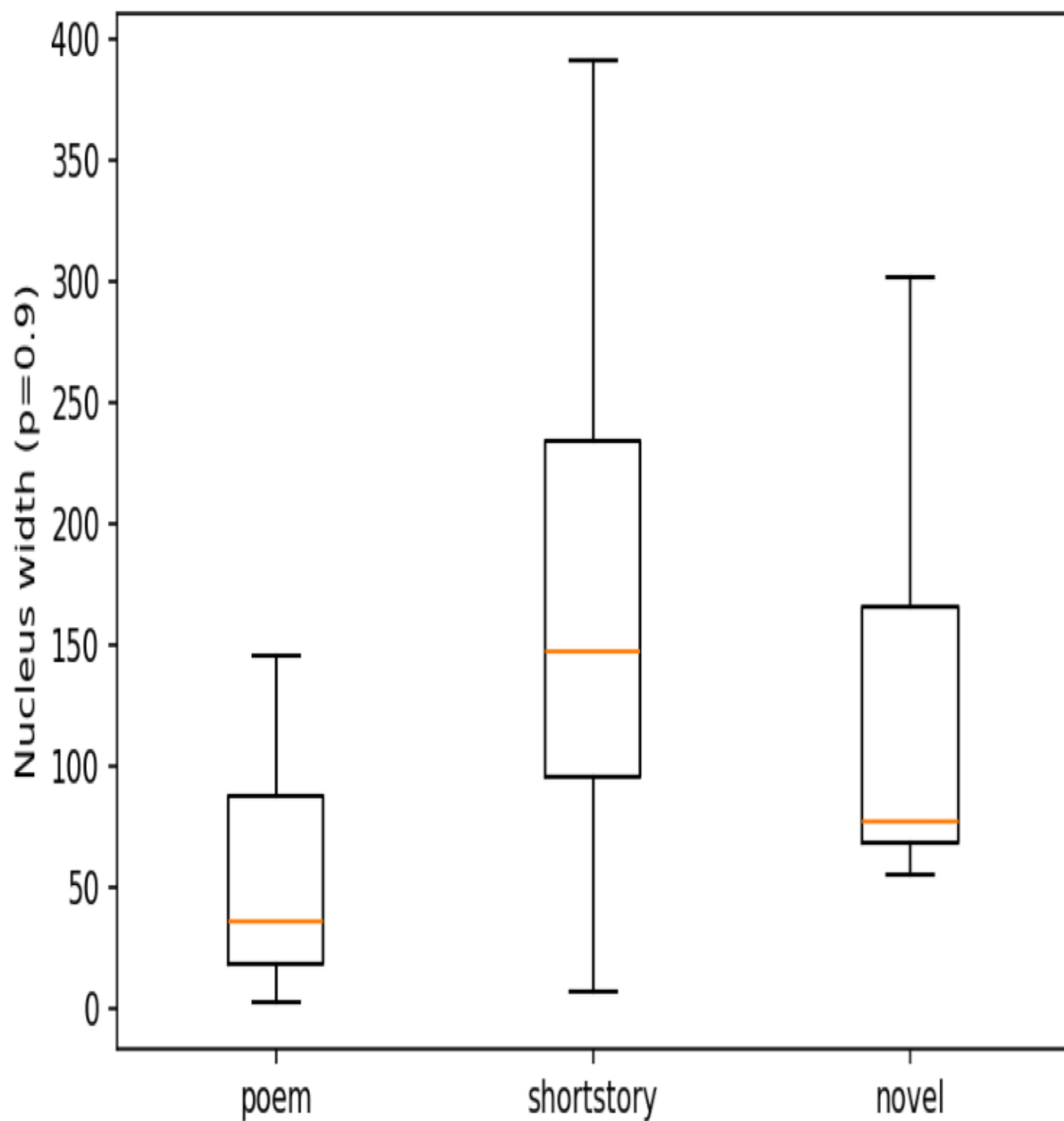Authors: Δ spike next content rate (Qwen/Qwen2.5-1.5B − gpt2) — most positive
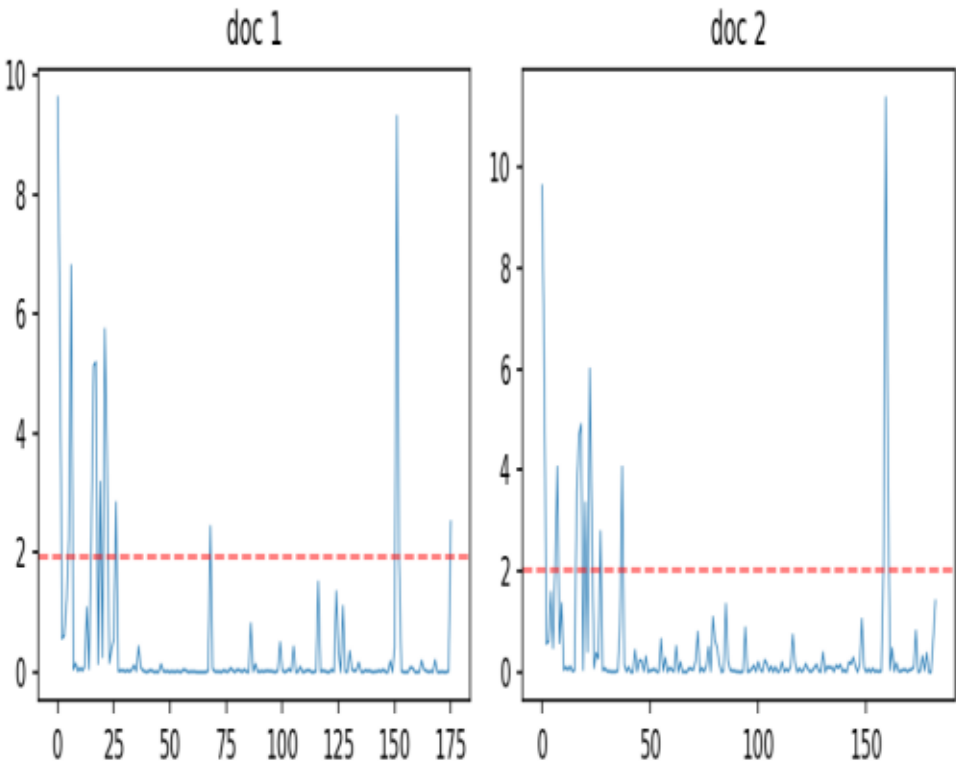
authors delta spike next content rate mean

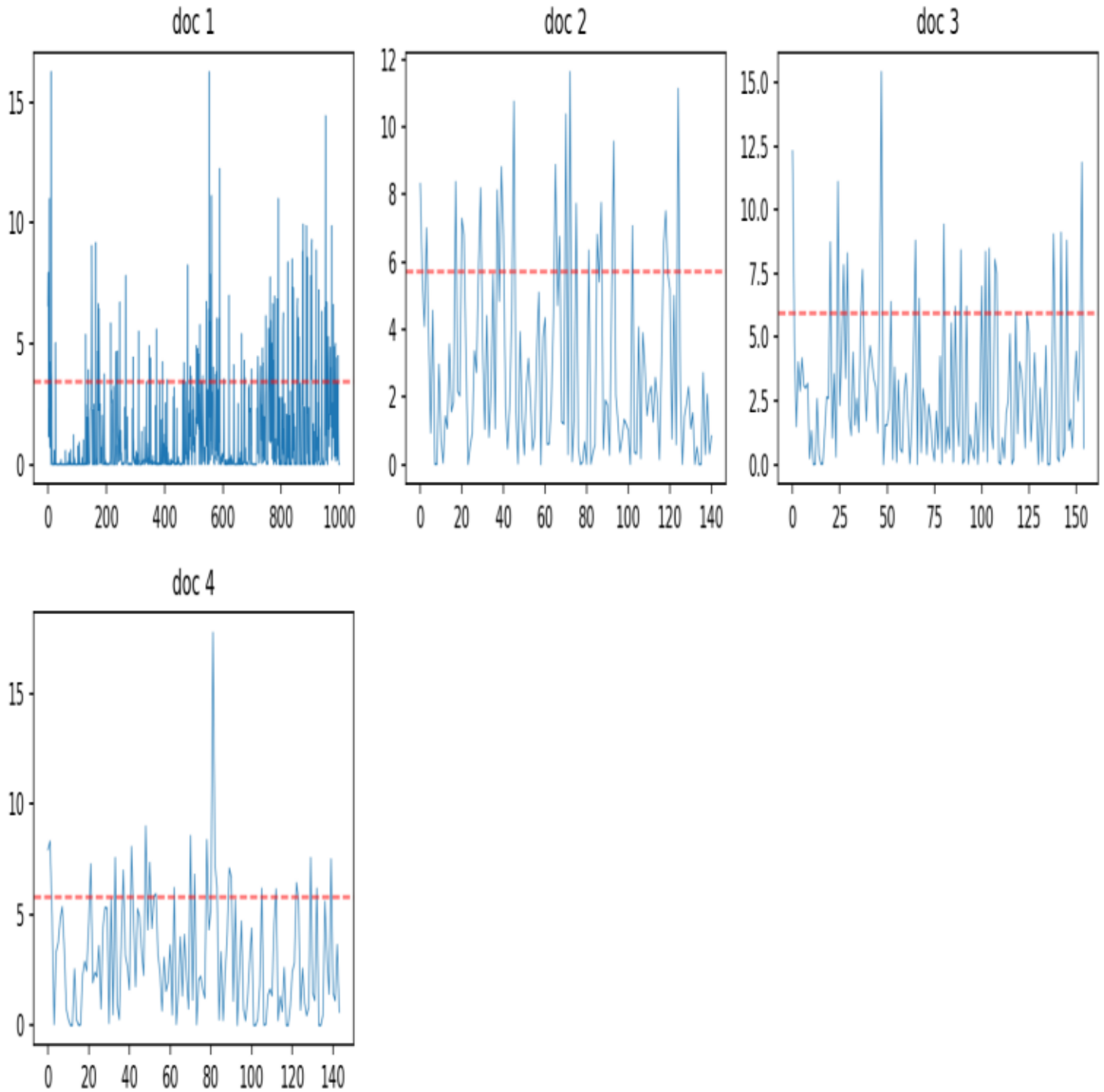Authors: Entropy vs Surprisal — Qwen/Qwen2.5-1.5B (size ~ tokens

authors entropy vs surprisal

Docs: Nucleus width by type — Qwen/Qwen2.5-1.5B

docs nucleus width by type

William Shakespeare: Surprisal time series (first 1k tokens)

author william shakespeare series

P G Wodehouse: Surprisal time series (first 1k tokens)

author p g wodehouse series

Fixed-Up — Imagist

Write an imagist poem with clear, concrete images. At dawn, the city leans into light:\nI see the rising sun in pinks and oranges,\nIts warmth radiates through the streets,\nAnd birds sing their melodious songs.\nA warm breeze stirs the leaves,\nSending waves of fragrance into the air,\nAs I watch, the world begins to awake,\nIn a world of chaos and beauty.

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Fixed-Up — Sonnet

Write a sonnet with Shakespearean rhyme scheme (ABAB CDCD EFEF GG). On winter's breath, the river learns to sing:\nA sweet harmony, beneath the snow\nThat laments the dying of the day\nAs it retreats, into its deep abode\nWhere all life's hopes and dreams have passed away\nAnd the world is once again reborn\nWith new beginnings and a fresh start\nThat makes me wonder, what lies ahead\nOf what we've come to know and seen\nAnd what we'll endure, in time's great grandeur\nAs we traverse the path of life

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Fixed-Up — Couplets

In twilight, markets close and sparrows lift:\n\nI have a small child, whose math skills are far below those of her peers. When she had an interest in numbers, I taught her the basic operations: addition, subtraction, multiplication and division. I also taught her some advanced concepts, such as fractions and negative numbers.\n\nHowever,

Fixed-Up — Couplets

Write a short poem in rhymed couplets (AA) with precise images. In twilight, markets close and sparrows lift:\nTheir calls, like distant bells, ring through the sky.\nFor in this hour of day, the earth is still\nAnd skies are blue, a canvas vast and deep.\nThe city's heart beats slow, a whispering sea,\nAs shadows dance and secrets weave their way.\nIn this quiet moment, time stands still,\nAnd dreams take flight, in the air we'll

Fixed-Up — Prose

Write a paragraph in the style of P. G. Wodehouse. In the matter of Aunt Agatha, I have always maintained that a fellow must keep his wits polished, lest he be sent to the country for a rest cure and come back engaged. When you take into account the number of elderly ladies who are suddenly on the wane, and who find themselves in need of an injection of young vitality - as they call it - I am sure that there is not a man in this world who would not be glad to have a piece of his brains. For instance, Mrs. Smith of the Savoy, who was so charming to me when I was with her in the south, and whose house was such a delight to visit, now seems to be somewhat feeble-minded. She looks at you and she says, "I'm very sorry to have to say this, but there's something the matter with me." And I have never yet seen

Fixed-Up — Prose

Write a paragraph in the style of Ernest Hemingway. In the late summer of that year we lived in a house in a village that looked across the river and the plain to the mountains. It was a small house, but it had a beautiful view. The days were long and hot, and we spent them reading and writing in the shade of the trees. Sometimes we took walks along the river, and sometimes we sat in the fields and watched the birds. We had no electricity or running water, but we were happy. We knew that we were poor, but □ A. It's a story about a simple, happy life in the country.