Typography Style Transfer

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TYPEFACE WEIGHTS

Roboto Thin
Roboto Light
Roboto Regular
Roboto Medium
Roboto Bold
Roboto Black
Roboto Thin Italic
Roboto Light Italic
Roboto Italic
Roboto Medium Italic
Roboto Bold Italic
Roboto Black Italic

True Bold

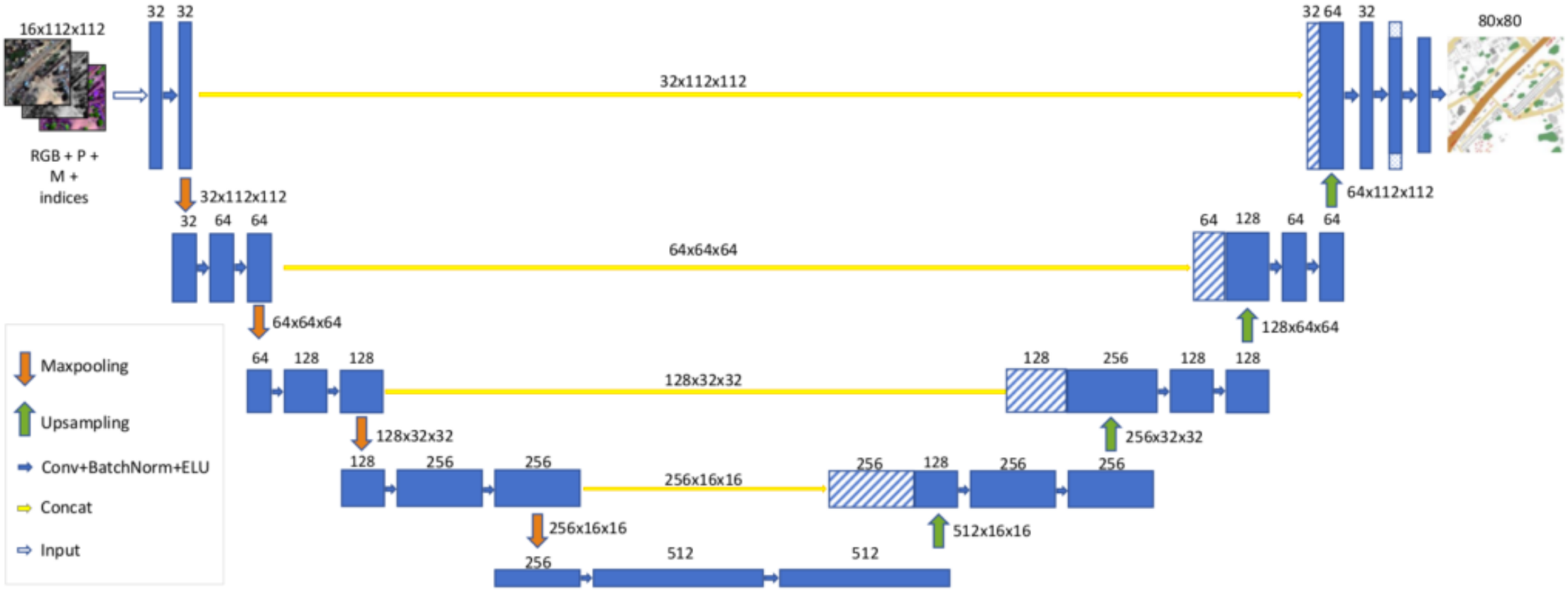
Faux Bold

DATASETS

- **LATIN**: 4000+ Open Source fonts from Google Fonts and FontSquirrel. 100 ASCII characters for each.

- **CJK**: Adobe/Google’s Source Hans Sans & Serif. 65536 symbols in 6 different weights and both sans and serif

U-NET ARCHITECTURE



LABEL ALIGNMENT

Bad Alignment

Good Alignment

BOLD

TRAIN

X	Y*	Y
9	9	9
7	7	7
~	~	~
4	4	4
N	N	N
v	v	v

VALIDATION

X	Y*	Y
X	X	X
*	*	*
e	e	e
-	-	-
b	b	b
4	4	4

LIGHT

TRAIN

X	Y*	Y
:	:	:
>	>	>
K	K	K
(	(	(
n	n	n
#	#	#

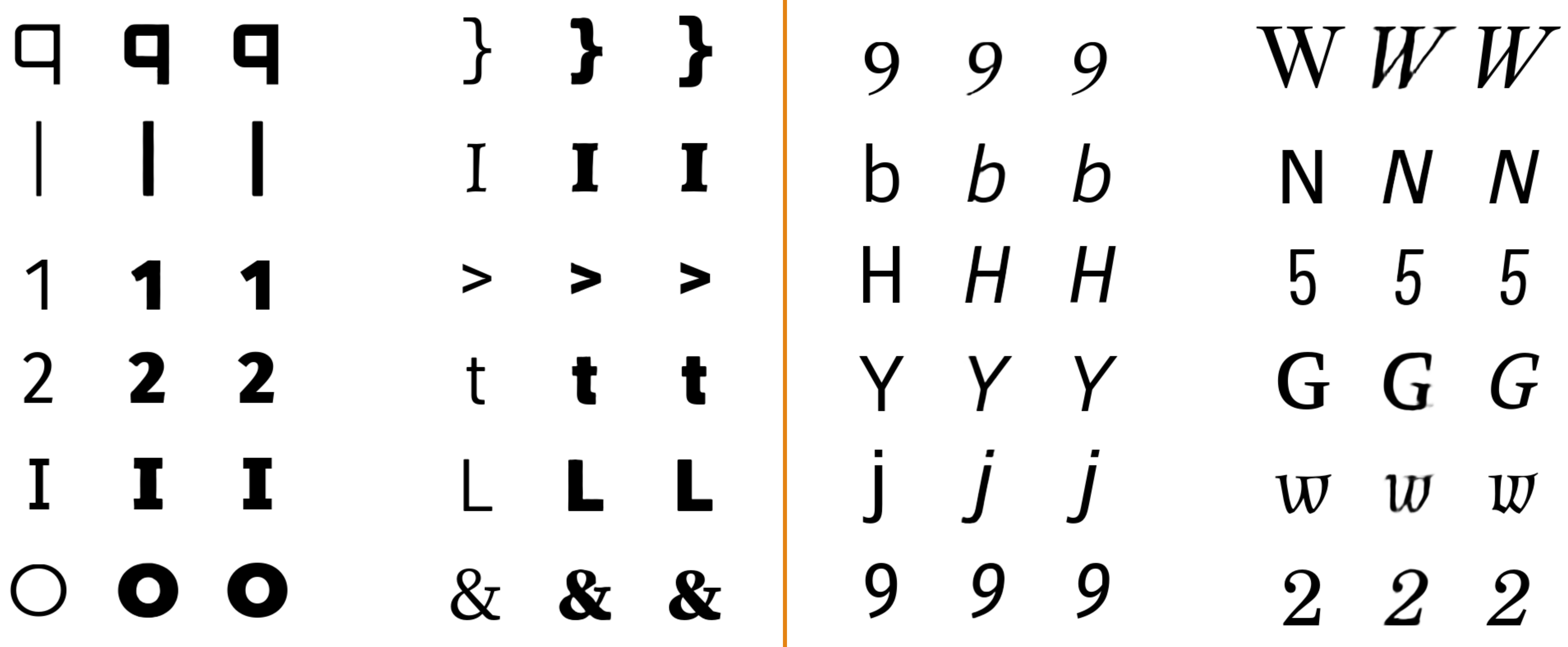
VALIDATION

X	Y*	Y
X	X	X
@	@	@
x	x	x
]	]	]
G	G	G
r	r	r

BLACK

ITALIC

BLACK – TRAIN			BLACK – VALIDATION			ITALIC – TRAIN			ITALIC – VALIDATION		
X	Y*	Y	X	Y*	Y	X	Y*	Y	X	Y*	Y



BOLD SERIF KANJI

TRAIN

X	Y*	Y
愡	愡	愡
壧	壧	壧
婜	婜	婜
袴	袴	袴
顅	顅	顅
閞	閞	閞

VALIDATION

X	Y*	Y
怚	怚	怚
蕑	蕑	蕑
都	都	都
笘	笘	笘
蚼	蚼	蚼
呉	呉	呉

BOLD SANS KANJI

TRAIN

X	Y*	Y
曇	曇	曇
铙	铙	铙
蟗	蟗	蟗
盃	盃	盃
勇	勇	勇
戻	戻	戻

VALIDATION

X	Y*	Y
閏	閏	閏
抗	抗	抗
棺	棺	棺
鵝	鵝	鵝
帶	帶	帶
鬟	鬟	鬟

SERIF ⟶ SANS

TRAIN

X	Y*	Y
混	混	混
蚕	蚕	蚕
趄	趄	趄
坽	坽	坽
赘	赘	赘
紟	紟	紟

VALIDATION

X	Y*	Y
贸	贸	贸
瘘	瘘	瘘
酞	酞	酞
笄	笄	笄
塞	塞	塞
猏	猏	猏

SANS⟶ SERIF

TRAIN

X	Y*	Y
樸	樸	樸
郇	郇	郇
獐	獐	獐
灈	灈	灈
抔	抔	抔
衬	衬	衬

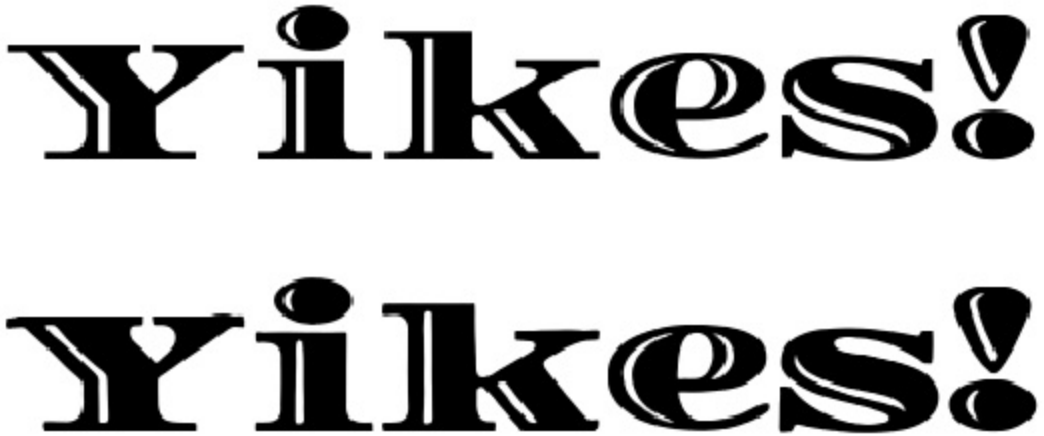
VALIDATION

X	Y*	Y
唠	唠	唠
趜	趜	趜
駢	駢	駢
僞	僞	僞
猩	猩	猩
夗	夗	夗

EVALUATION

Dice Coefficient:

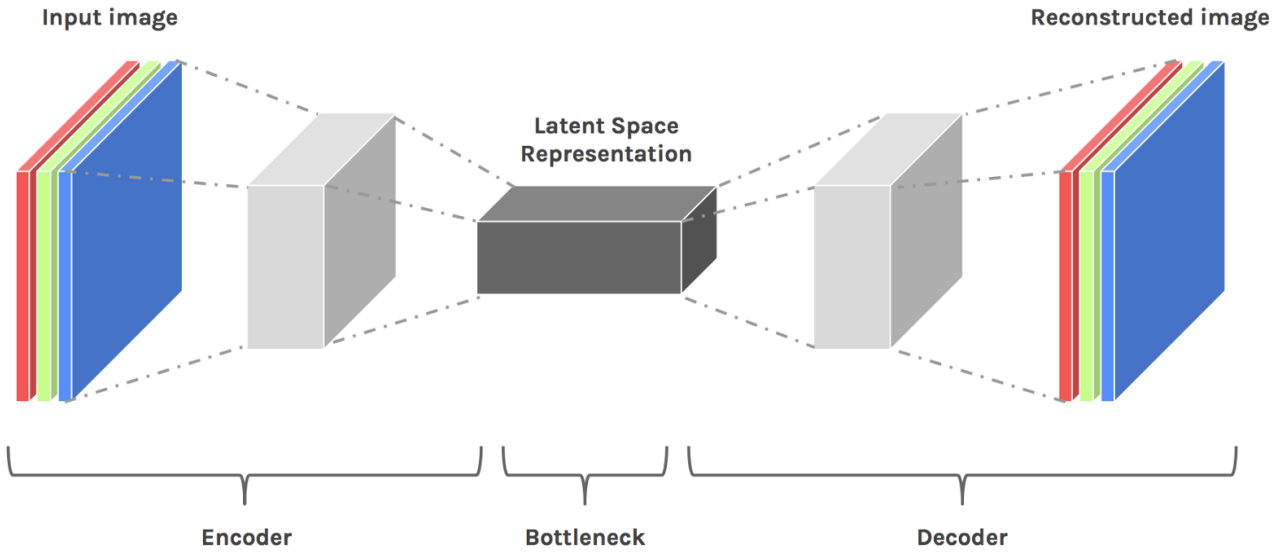
- Training: >90%
- Validation: >85% (except italics)

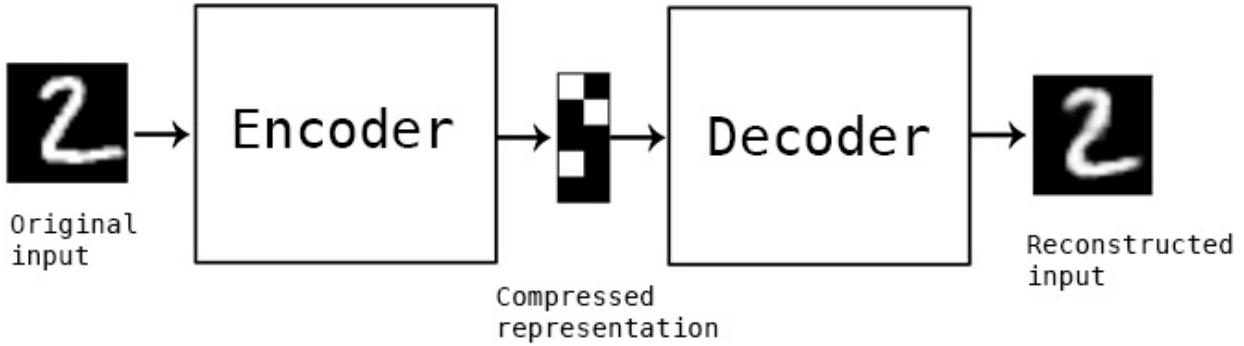


Perception Test: Subjects are presented with pairs of example and determine if they are a valid pair

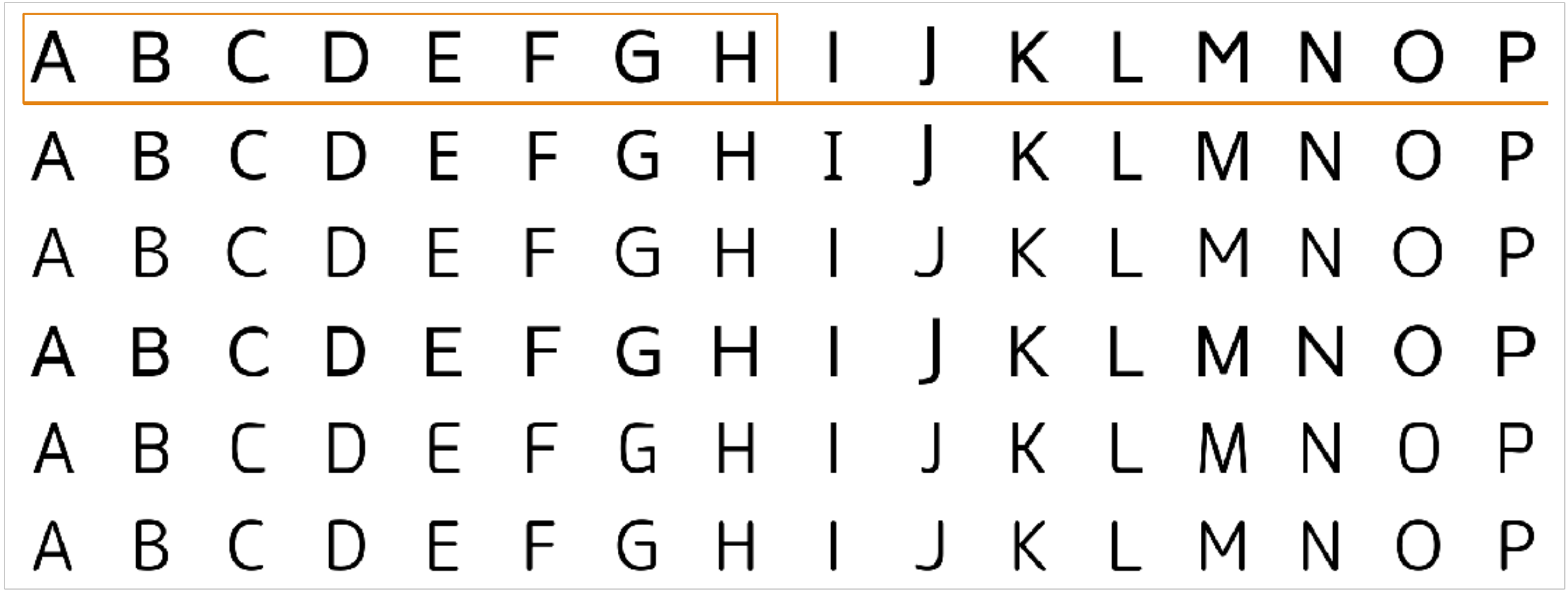
- Training: >96%
- Validation: >90% (except italics)

VARIATIONAL AUTOENCODER

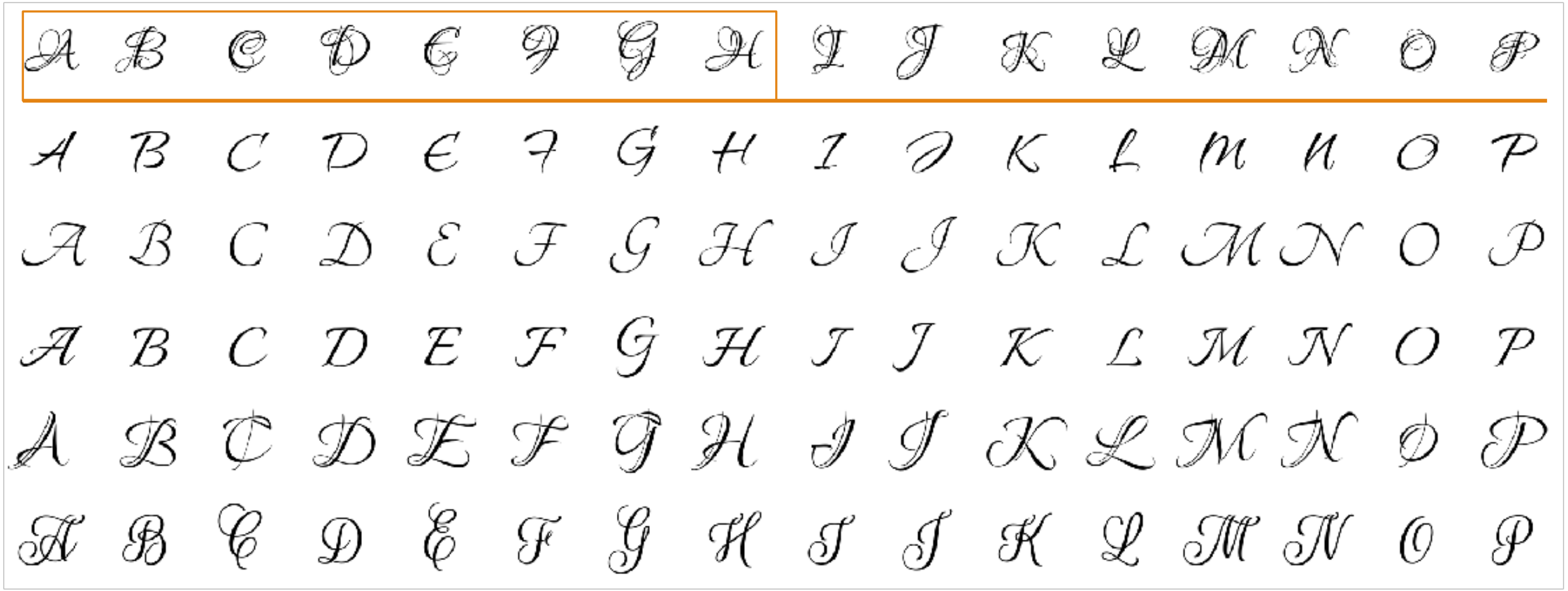




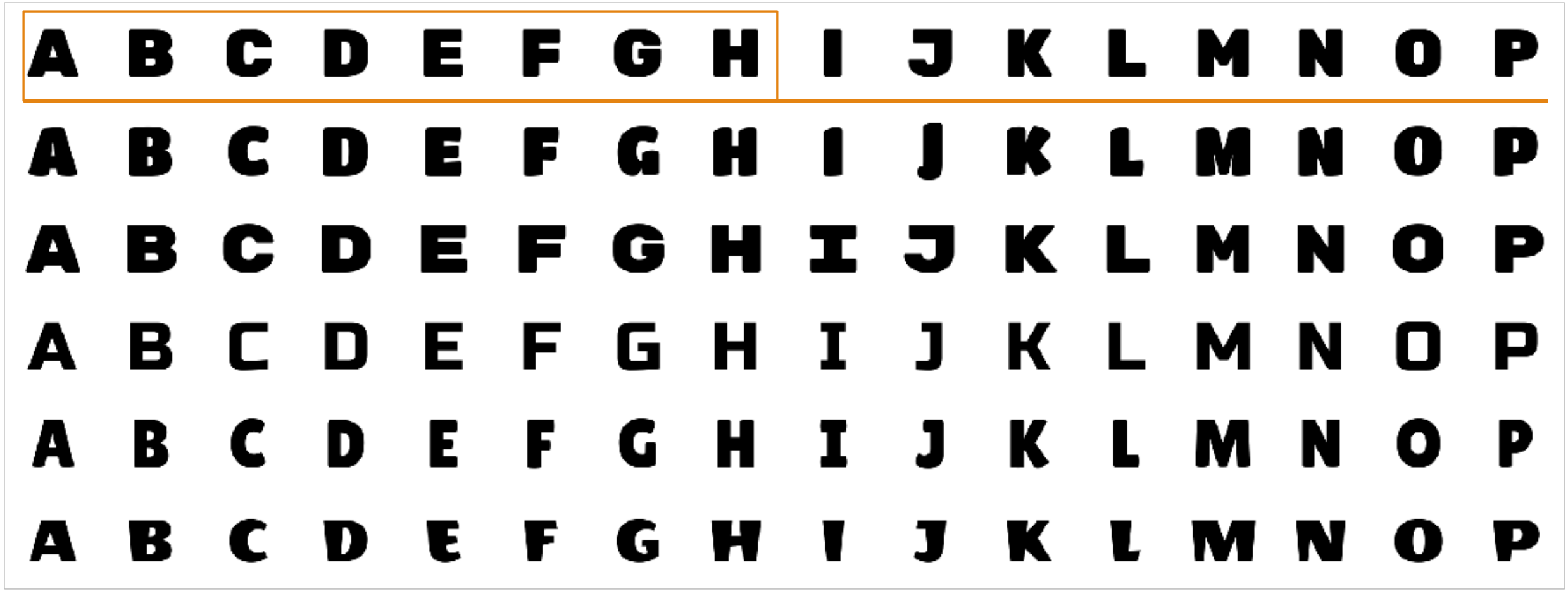
NEAREST FONTS IN LATENT SPACE



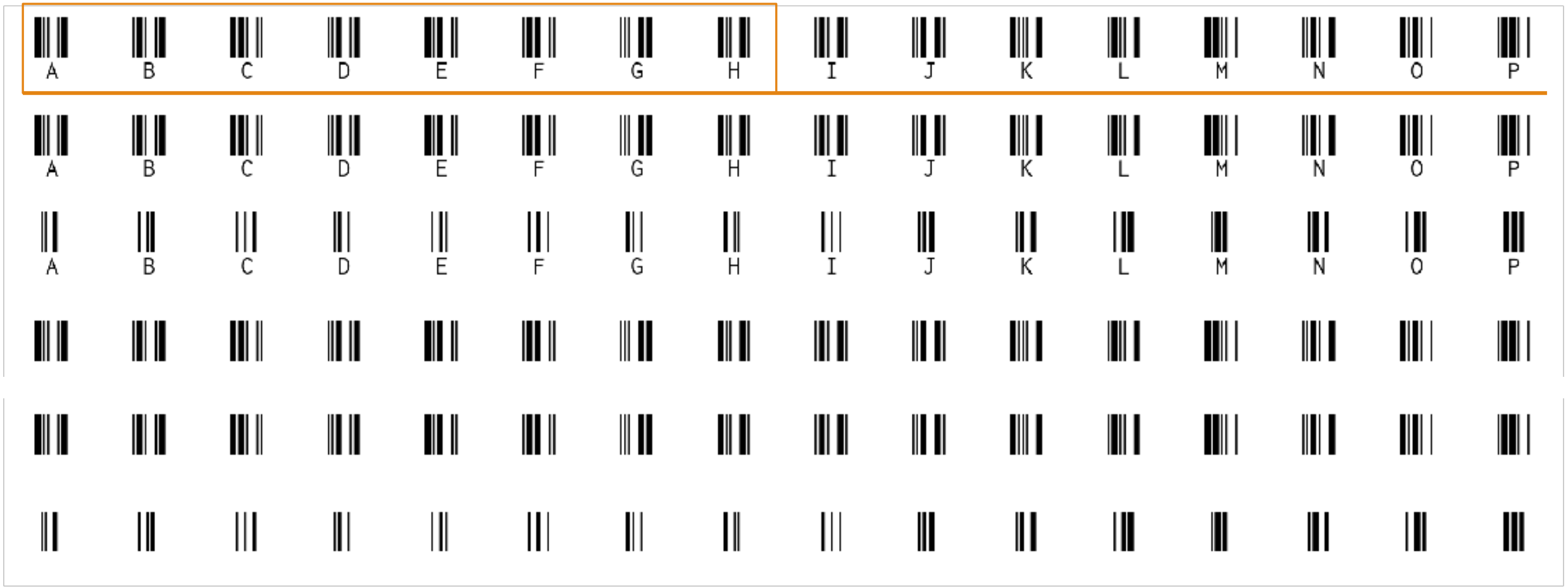
NEAREST FONTS IN LATENT SPACE



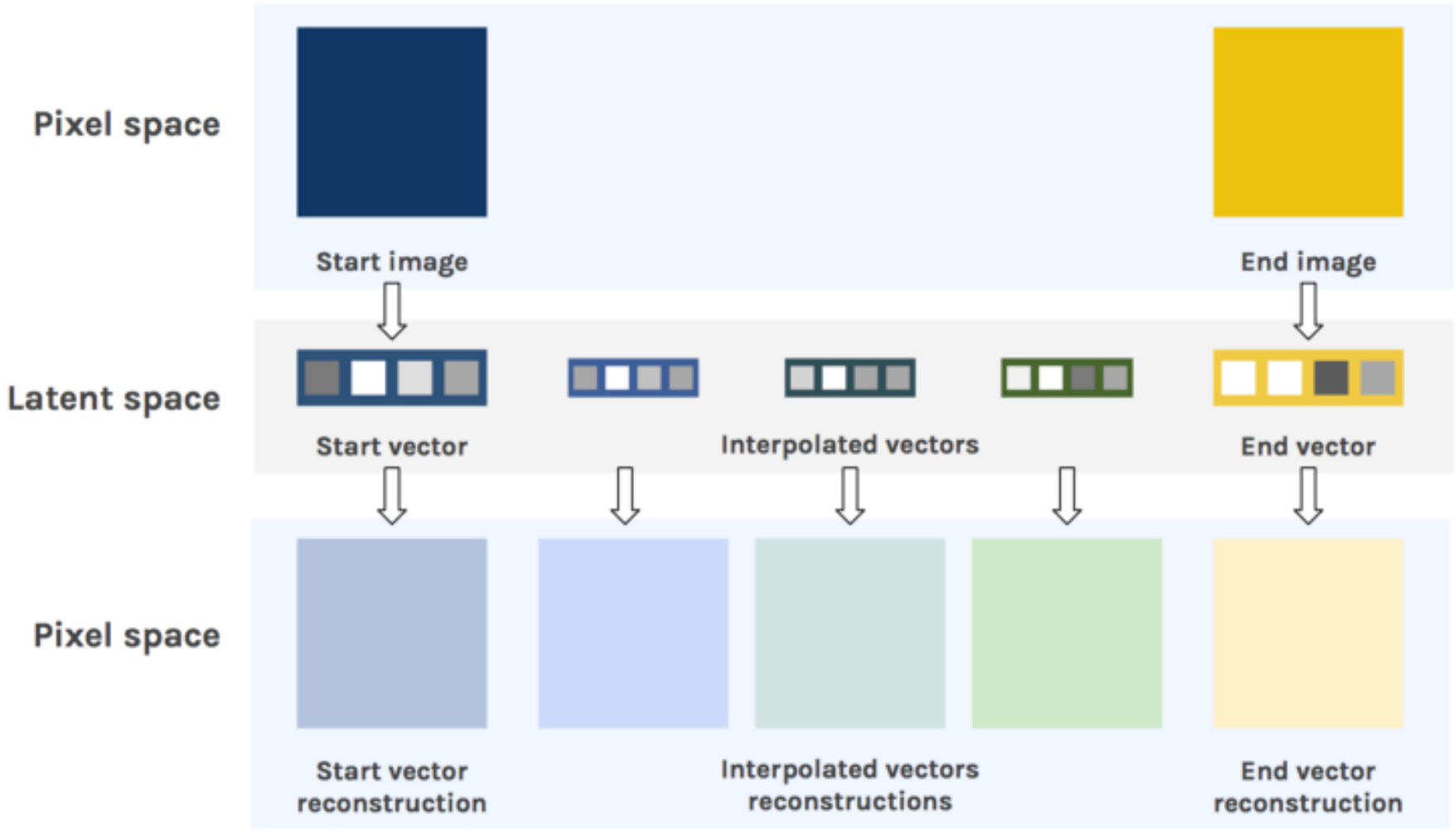
NEAREST FONTS IN LATENT SPACE



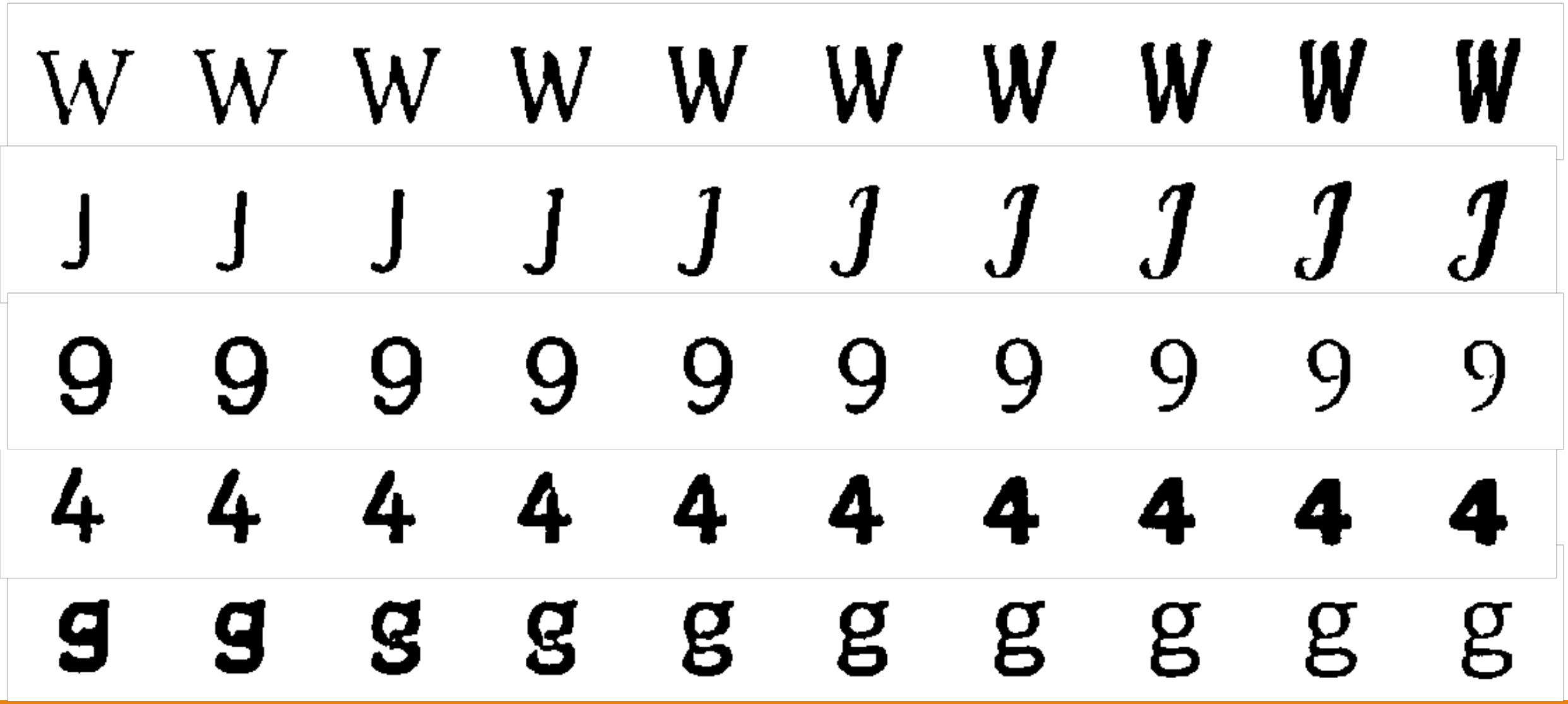
NEAREST FONTS IN LATENT SPACE



FONT INTERPOLATION



FONT INTERPOLATION



Thank You!

FURTHER WORK

- Adversarial losses for indirect training
- Conditional Generative Adversarial Networks
- Conditional Variational Autoencoder for latent representation
- Estimating typeface vector graphics from output images