Finding person images in image databases given the person’s language descriptions.

Query Description
The woman is wearing a long, bright orange gown with a white belt at her waist. She has her hair pulled back into a bun or ponytail.

Retrieval Results
Person Image Database

CUHK-PEDES Dataset
The woman is dressed up like Marilyn Monroe, with a white dress that is blowing upward in the wind, a short curly blonde hair, and high heels.

The man is wearing a white wedding dress with a white stripe on the side, and a yellow flowered skirt as she stands on the floor.

Gated Neuronal Attention (GNA-RNN)
• Latent visual concepts (blue branch)
  \( v = \text{CNN}(mg), v \in \mathbb{R}^d \)
• Word-concept attention
  \( A_i = f_1(\text{LSTM}(W_i)), A_i \in \mathbb{R}^d \)
• Word-level importance
  \( g_t = f_2(\text{LSTM}(W_t)), g_t \in \mathbb{R} \)
• Word-image affinity
  \( a_i = g_t \sum_{n=1}^{d} A_i(v)^t_v, \sum_{n=1}^{d} A_i(v) = 1 \)
• Sentence-image affinity
  \( \bar{a} = \sum_{t=1}^{l} a_i \)

User Study on CUHK-PEDES
• Expressive power in terms of the number of sentences and sentence length.
• Expressive power of different word types.

Quantitative Results

### Table 1: Quantitative Results

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<td>53.64</td>
</tr>
</tbody>
</table>

[2] Learning deep representations of fine-grained visual descriptions, CVPR, 2016

Qualitative Search Results
The woman is wearing a wedding dress with brown hair pulled back into a long veil. The dress is cinched with a white ribbon belt.

The lady wears a white shirt, short flowered skirt as she stands on the floor.

A girl with a ponytail is wearing a red top with a white stripe on the side, and a yellow skirt with short sleeves and a rounded neck.

A man is wearing an orange polo shirt and black pants, and he is walking away.

The man has short dark hair and is wearing a white tuxedo jacket, white tuxedo shirt, black bow tie, black dress pants, and black shoes.