

# Supplementary Material for Multi-Task Adversarial Network for Disentangled Feature Learning

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## 1. Network Structure

### 1.1. Network Structure for Font Recognition

Encoder and Discriminators			Generator		
Layer	Filter/Stride	Output Size	Layer	Filter/Stride	Output Size
			<i>FCconv</i>		$6 \times 6 \times 512$
<i>Conv11</i>	$3 \times 3/1$	$96 \times 96 \times 32$	<i>FCconv5</i>	$3 \times 3/2$	$12 \times 12 \times 256$
<i>Conv12</i>	$3 \times 3/1$	$96 \times 96 \times 64$	<i>FCconv4</i>	$3 \times 3/2$	$24 \times 24 \times 128$
<i>Conv21</i>	$3 \times 3/2$	$48 \times 48 \times 64$	<i>FCconv32</i>	$3 \times 3/1$	$24 \times 24 \times 64$
<i>Conv22</i>	$3 \times 3/1$	$48 \times 48 \times 64$	<i>FCconv31</i>	$3 \times 3/2$	$48 \times 48 \times 64$
<i>Conv31</i>	$3 \times 3/2$	$24 \times 24 \times 64$	<i>FCconv22</i>	$3 \times 3/1$	$48 \times 48 \times 64$
<i>Conv32</i>	$3 \times 3/1$	$24 \times 24 \times 128$	<i>FCconv21</i>	$3 \times 3/2$	$96 \times 96 \times 64$
<i>Conv4</i>	$3 \times 3/2$	$12 \times 12 \times 256$	<i>FCconv12</i>	$3 \times 3/1$	$96 \times 96 \times 32$
<i>Conv5</i>	$3 \times 3/2$	$6 \times 6 \times 512$	<i>FCconv11</i>	$3 \times 3/1$	$96 \times 96 \times 1$
<i>AvgPool</i>	$6 \times 6/1$	$1 \times 1 \times 512$			
<i>FC1(D<sub>C</sub>)</i>		256			
<i>FC2(D<sub>C</sub>)</i>		$N^C$			
<i>FC1(D<sub>S</sub>)</i>		256			
<i>FC2(D<sub>S</sub>)</i>		$N^S$			

### 1.2. Network Structure for Face Recognition

Encoder and Discriminators			Generator		
Layer	Filter/Stride	Output Size	Layer	Filter/Stride	Output Size
			<i>FC</i>		$6 \times 6 \times 320$
<i>Conv11</i>	$3 \times 3/1$	$96 \times 96 \times 32$	<i>FCconv52</i>	$3 \times 3/1$	$6 \times 6 \times 160$
<i>Conv12</i>	$3 \times 3/1$	$96 \times 96 \times 64$	<i>FCconv51</i>	$3 \times 3/2$	$12 \times 12 \times 256$
<i>Conv21</i>	$3 \times 3/2$	$48 \times 48 \times 64$	<i>FCconv43</i>	$3 \times 3/2$	$12 \times 12 \times 256$
<i>Conv22</i>	$3 \times 3/1$	$48 \times 48 \times 64$	<i>FCconv42</i>	$3 \times 3/1$	$12 \times 12 \times 128$
<i>Conv23</i>	$3 \times 3/1$	$48 \times 48 \times 128$	<i>FCconv41</i>	$3 \times 3/1$	$12 \times 12 \times 192$
<i>Conv31</i>	$3 \times 3/2$	$24 \times 24 \times 128$	<i>FCconv33</i>	$3 \times 3/2$	$24 \times 24 \times 192$
<i>Conv32</i>	$3 \times 3/1$	$24 \times 24 \times 96$	<i>FCconv32</i>	$3 \times 3/1$	$24 \times 24 \times 96$
<i>Conv33</i>	$3 \times 3/1$	$24 \times 24 \times 192$	<i>FCconv31</i>	$3 \times 3/1$	$24 \times 24 \times 128$
<i>Conv41</i>	$3 \times 3/2$	$12 \times 12 \times 192$	<i>FCconv23</i>	$3 \times 3/2$	$48 \times 48 \times 128$
<i>Conv42</i>	$3 \times 3/1$	$12 \times 12 \times 128$	<i>FCconv22</i>	$3 \times 3/1$	$48 \times 48 \times 64$
<i>Conv43</i>	$3 \times 3/1$	$12 \times 12 \times 256$	<i>FCconv21</i>	$3 \times 3/1$	$48 \times 48 \times 64$
<i>Conv51</i>	$3 \times 3/2$	$6 \times 6 \times 256$	<i>FCconv13</i>	$3 \times 3/2$	$96 \times 96 \times 64$
<i>Conv52</i>	$3 \times 3/1$	$6 \times 6 \times 160$	<i>FCconv12</i>	$3 \times 3/1$	$96 \times 96 \times 32$
<i>Conv53</i>	$3 \times 3/1$	$6 \times 6 \times 320$	<i>FCconv11</i>	$3 \times 3/1$	$96 \times 96 \times 1$
<i>AvgPool</i>	$6 \times 6/1$	$1 \times 1 \times 320$			
<i>FC(D<sub>C</sub>)</i>		$N^C$			
<i>FC(D<sub>S</sub>)</i>		$N^S$			