surface conv + ReLU
surface pooling
surface upsampling
skip connection

copy
resampling
softmax

Concatenation of F and M
$N_d \times 2f_{in}$

C_{in} C_1 C_1

$V_1 = N_d$

Input features

M
$(N_d \times 3)$

F
$(N_d \times 3)$

V_2 C_2 C_2

V_3 C_3 C_3

V_4 C_4 C_4

V_5 C_5 C_5

V_6 C_6

C_1

V_1 $N_d \times C_1$

C_2

V_2

C_3

V_3

C_4

V_4

C_5

V_5

Registered features

Feedforward Spherical Network

$N_c \times N_l$

Deformed control grid
$N_c \times 3$

$N_c \times 3$

D

CRF-RNN

U

Control grid
$N_c \times 3$

G

Upsample to data level

Deformed data surface

E.g. Control points grid   Labels around a control point

Control point
Label point