

```

$ internal_fat_mask = ipl_dir + "_vat_mask.aim"
$ internal_fat = ipl_dir + "_vat.aim"
$ check_d = ipl_dir + "_check_file.aim"
$ sub_fat_mask = ipl_dir + "_sat_mask.aim"
$ sub_fat = ipl_dir + "_sat.aim"
$ total = ipl_dir + "_picture_file.aim"

$ ipl_scanco_prog := $um:ipl_scanco_m.exe
$ ON ERROR THEN EXIT
$ ipl_batch

!
! Segmentation
!

/db_scanco_activate true

/isq_to_aim
-aim_name org
-isq_filename "ipl_isq
-pos "ipl_voix "ipl_voiy "ipl_voiz
-dim "ipl_voidx "ipl_voidy "ipl_voidz
/write org "ipl_aim

```

### **Step 1: Generation of the Mask for the Animal Body**

```

/gauss org gauss
-sigma "ipl_sigma0
-support "ipl_support0
/edge_canny
-input gauss
-output edge
-do_hysteresis True
-lowThresh "ipl_lower0
-highThresh "ipl_upper0
-edge_mode 3
/dilation
-input edge
-output dill
-dilate_distance 3
/bound
-input dill
-output dil
-z_only true
/copy dil d
/cl d 1 1
/border_change
-input d
-output tot1
-border 50 50 0
/inv tot1 none
/cl tot1 1 1
/inv tot1 none
/cl tot1 1 1
/er tot1 tot 14
/cl tot 1 1
/dil tot tot1 10

```

```
/cl tot1 1 1
/write tot1 "ipl_gobj0
```

### **Step 2: Generation of the Mask for Visceral Adipose Tissue**

```
/gobj dil "ipl_gobj0 4
/cl dil 1 1
/close dil m 26
/inv m none
/cl m 1 1
/inv m none
/write m "check_d
/gobj m "check_d 11
/cl m 1 1
/write m "internal_fat_mask
/inv m none
/write m "sub_fat_mask
```

..

```
$ ON ERROR THEN CONTINUE
$ipl_batch
/db_scanco_activate true
/read org "ipl_aim
```

### **Step 3: Correction of the Subcutaneous Fat Mask**

```
/seg_gauss org seg1 (fat segmentation parameters)
```

```
-sigma      "ipl_sigma1
-support    "ipl_support1
-low        "ipl_lower1
-upp        "ipl_upper1
-value      127
/gobj seg1 "ipl_gobj0 0
/bound seg1 seg
/copy seg segi
/copy seg sege
/write seg "ipl_segaim
/gobj segi "internal_fat_mask 0
/gobj sege "sub_fat_mask 0
```

```
/cl sege 1 1
/read tot "ipl_gobj0
/gobj tot "ipl_gobj0 8
/inv tot none
/add tot sege check
/inv check none
/cl check 1 1
/inv check 1 1
/cl check 1 1
/er check check1 10
/cl check1 1 1
/dil check1 check 10
/inv check none
/cl check 1 1
/write check "check_d
/copy seg seg1
/gobj seg1 "check_d 0
/cl seg1 1 1
/gobj check "check_d 20
```

```

/add seg1 check check2
/write check2 "check_d
/er check2 check 4
/cl check 1 1
/dil check check2 4
/write check2 "internal_fat_mask
/inv check2 none
/write check2 "sub_fat_mask
/copy seg seg1
/gobj seg "internal_fat_mask 0
/gobj seg1 "sub_fat_mask 0
/write seg "internal_fat
/write seg1 "sub_fat
/set_value seg 1 0
/add seg1 seg t
/write t "total
..

```

#### **Step 4: TAT, SAT and VAT Volume and Density Evaluation**

```

$ ON ERROR THEN CONTINUE
$ipl_batch
/db_scanco_activate true
/read tot "total
/read org "ipl_aim
/gobj tot "internal_fat 0
/vox_scanco_param
  -input tot
/voygobj_scanco_param
  -input org
  -gobj_filename "internal_fat
  -peel_iter 2
  -region_number 0
/voygobj_scanco_param
  -input org
  -gobj_filename "sub_fat
  -peel_iter 2
  -region_number 1
..
$exit

```

## Definition of Variables

```
$! 3D EVALUATION
$! -----
$!
$! Defining Symbols for Project Fat_separation
$!
$!
$ EVAL_PROJECT      ::= Fat_separation
$ EVAL_PROJECTT     ::= FAT_SEPARATION
$ EVAL_EVALFILE     ::= UE:UCT_EVALUATION_V6.COM
$ EVAL_IPLFILE      ::= IPL:IPL_fat_calculation.COM
$ EVAL_USERFILE0    ::= UE:UCT_EVALUATION_V6_PRSUCTION.COM
$ EVAL_USERFILE1    ::= UE:UCT_EVALUATION_V6_3DRESULT_APPEND.COM
$ EVAL_USERFILE2    ::=
$ EVAL_USERFILE3    ::=
$ EVAL_LOGFILE      ::= .LOG
$ EVAL_EQUEUE       ::= SYS$FAST
$ EVAL_PQUEUE       ::=
$ EVAL_COPIES       ::=
$ EVAL_SHEET        ::=
$ EVAL_TYPE         ::=
$ EVAL_SIZE         ::=
$ EVAL_FORMAT       ::=
$ EVAL_COLOR        ::=
$ EVAL_NORM         ::=
$ EVAL_NO_Z         ::=
$ EVAL_SCALE        ::=
$ EVAL_QUALITY      ::=
$!
$ IPL_GOBJ0         ::= UCT_MEASUREMENT_DATA:[00001913.00012291]V0005468_TOTAL.AIM
$ IPL_FNAME0        ::=
$ IPL_FNAME1        ::=
$ IPL_FNAME2        ::=
$ IPL_FNAME3        ::=
$ IPL_FNAME4        ::=
$ IPL_FNAME5        ::=
$ IPL_FNAME6        ::=
$ IPL_FNAME7        ::=
$!
$ IPL_PEEL0         ::= 0
$ IPL_PEEL1         ::= 0
$ IPL_PEEL2         ::=
$ IPL_PEEL3         ::=
$ IPL_PEEL4         ::=
$ IPL_GOBJ0         ::= UCT_MEASUREMENT_DATA:[00001913.00012291]V0005468_TOTAL.AIM
$ IPL_GOBJ1         ::=
$ IPL_GOBJ2         ::=
$ IPL_GOBJ3         ::=
$ IPL_GOBJ4         ::=
$!
$ IPL_SAMPNAME      ::= Luu LT 9 mo
$ IPL_SAMPNAMET     ::= LUU_LT_9_MO
$ IPL_SAMPNO        ::= 1913
$ IPL_MEASNO        ::= 12291
$ IPL_SITE          ::= CU
$!
$ IPL_VOIX          ::= 34
$ IPL_VOIY          ::= 76
$ IPL_VOIZ          ::= 540
$ IPL_VOIDX         ::= 470
```

```

$ IPL_VOIDY      := 387
$ IPL_VOIDZ      := 200
$!
$ IPL_SIGMA0     := 2.000000  (edge detection parameters)
$ IPL_SUPPORT0   := 4
$ IPL_LOWER0     := 70
$ IPL_UPPER0     := 240
$ IPL_UNIT0      := 6
$ IPL_SIGMA1     := 1.500000  (fat segmentation parameters)
$ IPL_SUPPORT1   := 3
$ IPL_LOWER1     := 49
$ IPL_UPPER1     := 87
$ IPL_UNIT1      := 6
$ IPL_SIGMA2     :=
$ IPL_SUPPORT2   :=
$ IPL_LOWER2     :=
$ IPL_UPPER2     :=
$ IPL_UNIT2      :=
$ IPL_SIGMA3     :=
$ IPL_SUPPORT3   :=
$ IPL_LOWER3     :=
$ IPL_UPPER3     :=
$ IPL_UNIT3      :=
$ IPL_MISC1_0    :=
$ IPL_MISC1_1    :=
$ IPL_MISC1_2    :=
$ IPL_MISC1_3    :=
$ IPL_MISC1_4    :=
$ IPL_MISC1_5    :=
$ IPL_MISC1_6    :=
$ IPL_MISC1_7    :=
$!
$! Starting IPL
$!
$ @IPL:IPL_fat_calculation.COM
$!
$! User Procedure 0:
$!
$! User Procedure 1:
$! Reading out 3D result database and putting it into appended .txt files
$!
$ IF
F$SEARCH("UCT_MEASUREMENT_DATA:[00001913.00012291]V0005468_3DRESULTS_FAT_SEPARAT
ION.TXT") .EQS. ""
$ THEN
$   COPY UU:UCT_3D_LIST_HEADER.TXT
UCT_MEASUREMENT_DATA:[00001913.00012291]V0005468_3DRESULTS_FAT_SEPARATION.TXT
$ ENDIF
$ IF F$SEARCH("SYS$SCRATCH:UCT_LIST_3DLOG_FAT_SEPARATION.TXT") .EQS. ""
$ THEN
$   COPY UU:UCT_3D_LIST_HEADER.TXT SYS$SCRATCH:UCT_LIST_3DLOG_FAT_SEPARATION.TXT
$ ENDIF
$ UCT_LIST
UU:UCT_3D_LIST_NOHEAD.TXT
UCT_MEASUREMENT_DATA:[00001913.00012291]V0005468_FAT_SEPARATION.TXT
0
12291
12291
$ APPEND UCT_MEASUREMENT_DATA:[00001913.00012291]V0005468_FAT_SEPARATION.TXT
UCT_MEASUREMENT_DATA:[00001913.00012291]V0005468_3DRESULTS_FAT_SEPARATION.TXT

```

```
$ APPEND UCT_MEASUREMENT_DATA:[00001913.00012291]V0005468_FAT_SEPARATION.TXT  
SYS$SCRATCH:UCT_LIST_3DLOG_FAT_SEPARATION.TXT  
$ DELETE UCT_MEASUREMENT_DATA:[00001913.00012291]V0005468_FAT_SEPARATION.TXT;  
$ EXIT
```