

# Shape classification and pitch detection in manuscript sources

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ho nor et omnis po pulus tribus  
 et lingue ser uient e. **P**ote  
 stas e ius potestas eterna que non  
 auferre tur et regnū eius quod nō cor  
 rumpe tur. **E**t da **R.** **M** illus est ga  
 briel an ge lus ad mariam virgi  
 nem desponsatam ioseph nūcians  
 ei verbum et expanescit virgo de lu  
 mine neti meas mari a mue  
 nisti gratiam apud do mi nus. **E**cce  
 cona ptes et pa rics et vocabi t  
 altis simi fili us. **A**

ho nor et omnis po pulus tribus  
 et lingue ser uient e. **P**ote  
 stas e ius potestas eterna que non  
 aufere tur et regnū eius quod nō cor  
 rumpe tur. Et dāx. **M**issus est ga  
 briel an ge lus ad mariam virgi  
 nem desponsatam ioseph nūcians  
 ei verbum et expanescit virgo de lu  
 mine nati meas mari a mue  
 nisti gratiam apud do mi num. Ecce  
 conu ptes et pa rics et vocabi t  
 altissimi fili us. **M**

CCI # 90765 B I

QA L-3 R





ho nox et omnis po pulus tribus  
et lingue ser uent e. **P**ote  
stas e ius potestas eterna que non  
aufere tur et regnu eius quod no cor  
rumpe tur. Et daxe. **M**issus est ga  
briel an ge lus ad mariam virgi  
nem desponsatam ioseph nūcians  
ei verbum et expanescit virgo de lu  
mine nati meas mari a mue  
nisti gratiam apud do mi nu: Ecce  
conci pies et pa rics et vocabi t  
altissimi fili us. **A**

CCI # 90765 - P. 11  
QA L-3 R



Handwritten text in a cursive script, appearing to be a list or series of notes. The text is written in dark ink on a light background. The handwriting is somewhat stylized and difficult to decipher, but it appears to be organized into several lines or paragraphs. The text is located in the upper half of the page.

CCI # 90765 - P. 11  
QA L-3 R

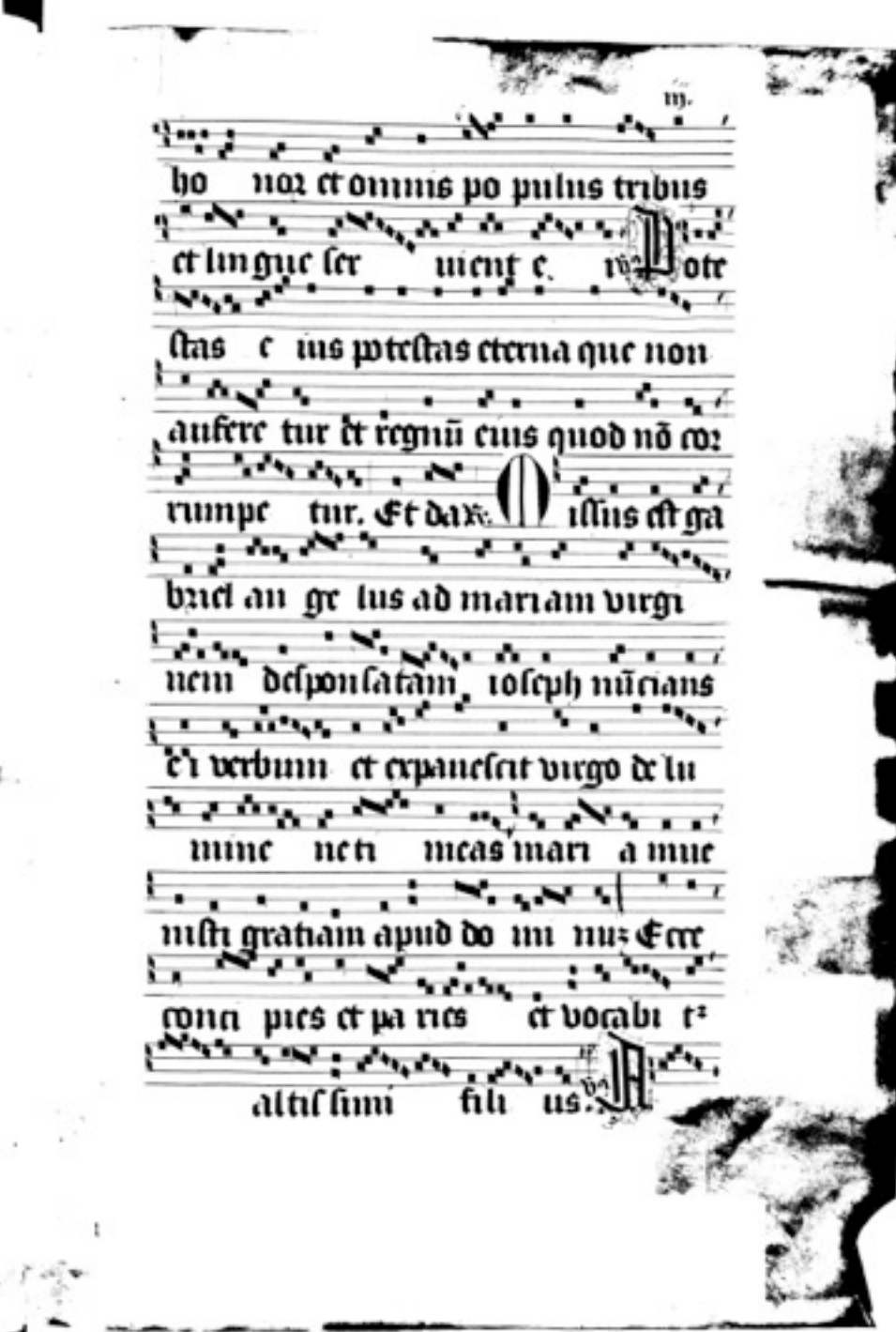




CCI # 90765 - P. 11  
QA L-3 R



# STAFFLINE REMOVAL



ho nor et omnis po pulus tribus  
et lin gue ser uient e. **P**ote  
tas e ius potestas eterna que non  
aufere tur et regnū eius quod nō cor  
rumpe tur. Et dāx. **I**llus est ga  
briel an ge lus ad mariam virgi  
nem desponsatam ioseph nūcians  
ei verbum et expanescit virgo de lu  
mine nati meas mari a mue  
nisti gratiam apud do mi num. Ecce  
conci pies et pa ries et vocabi r  
altis simi fili us. **A**

CCI # 90765 B  
QA L-3 R

# STAFFLINE REMOVAL

ho nor et omnis po pulus tribus  
et lingue ser uient e. **P**ote  
tas e ius potestas eterna que non  
aufere tur et regnū eius quod nō cor  
rumpe tur. Et daxe. **I**llus est ga  
briel an ge lus ad mariam virgi  
nem desponsatam ioseph nūcians  
ei verbum et expanseit virgo de lu  
mine nati meas mari a mue  
misti gratiam apud do mi num. Ecce  
conci pies et pa ries et vocabi t  
altis simi fili us. **A**

CCI # 90765 - P II  
QA L-3 R

Carter



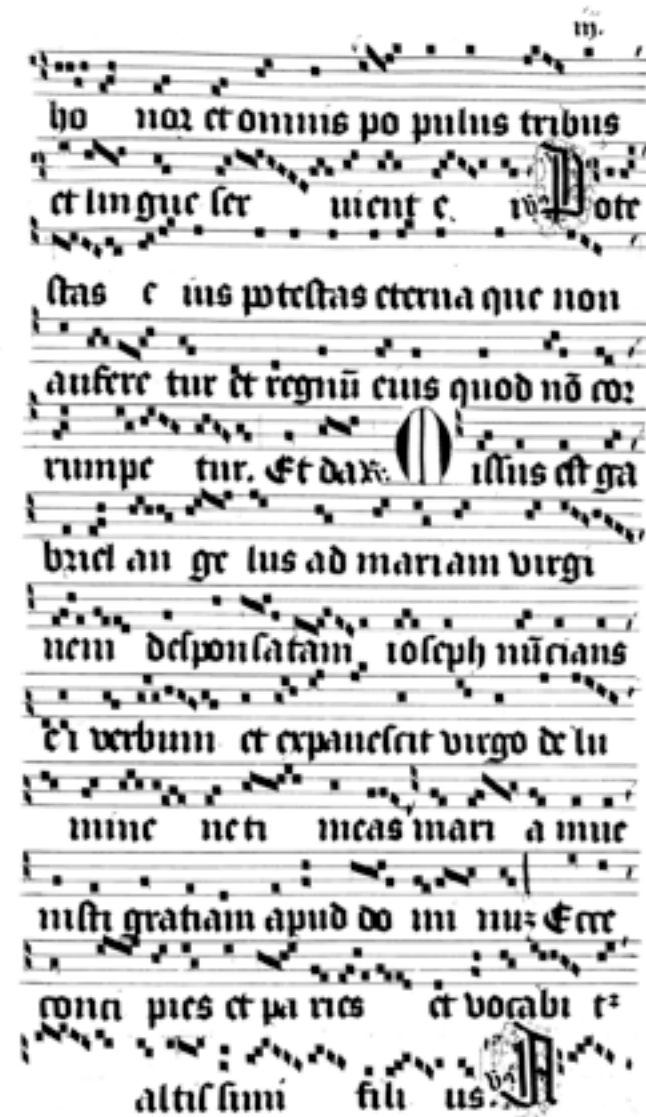
# STAFFLINE REMOVAL

ho nor et omnis po pulus tribus  
et lingue ser uient e. **P**ote  
tas e ius potestas eterna que non  
aufere tur et regnū eius quod nō cor  
rumpe tur. Et dax. **D** illus est ga  
briel an ge lus ad mariam virgi  
nem desponsatam ioseph nūcians  
ei verbum et expanseit virgo de lu  
mine nati meas mari a mue  
misti gratiam apud do mi num. Ecce  
conci pies et pa ries et vocabi t  
altis simi fili us. **A**

CCI # 90765 - P II  
QA L-3 R

Fujinaga

# STAFFLINE REMOVAL



CCI # 90765 - P II  
QA L-3 R

Linetracking

# STAFFLINE REMOVAL

ho nor et omnis po pulus tribus  
et lingue ser uient e. **P**ote  
tas e ius potestas eterna que non  
aufere tur et regnū eius quod nō cor  
rumpe tur. Et daxe. **I**llus est ga  
briel an ge lus ad mariam virgi  
nem desponsatam ioseph nūcians  
ei verbum et expanseit virgo de lu  
mine nati meas mari a mue  
misti gratiam apud do mi num. Ecce  
conci pies et pa ries et vocabi t  
altis simi fili us. **A**

CCI # 90765 - P II

QA L-3 R

Roach and Tatem

# STAFFLINE REMOVAL

ho nor et omnis po pulus tribus  
et lingue ser uent e. **P**ote  
tas e ius potestas eterna que non  
aufere tur et regnū eius quod nō cor  
rumpe tur. Et daxe. **M**issus est ga  
briel an ge lus ad mariam virgi  
nem desponsatam ioseph nūcians  
ei verbum et expanse sit virgo de lu  
mine nati meas mari a mue  
misti gratiam apud do mi num. Ecce  
conci pies et pa ries et vocabi t  
altis simi fili us. **A**

CCI # 90765 - P II  
QA L-3 R

Simple



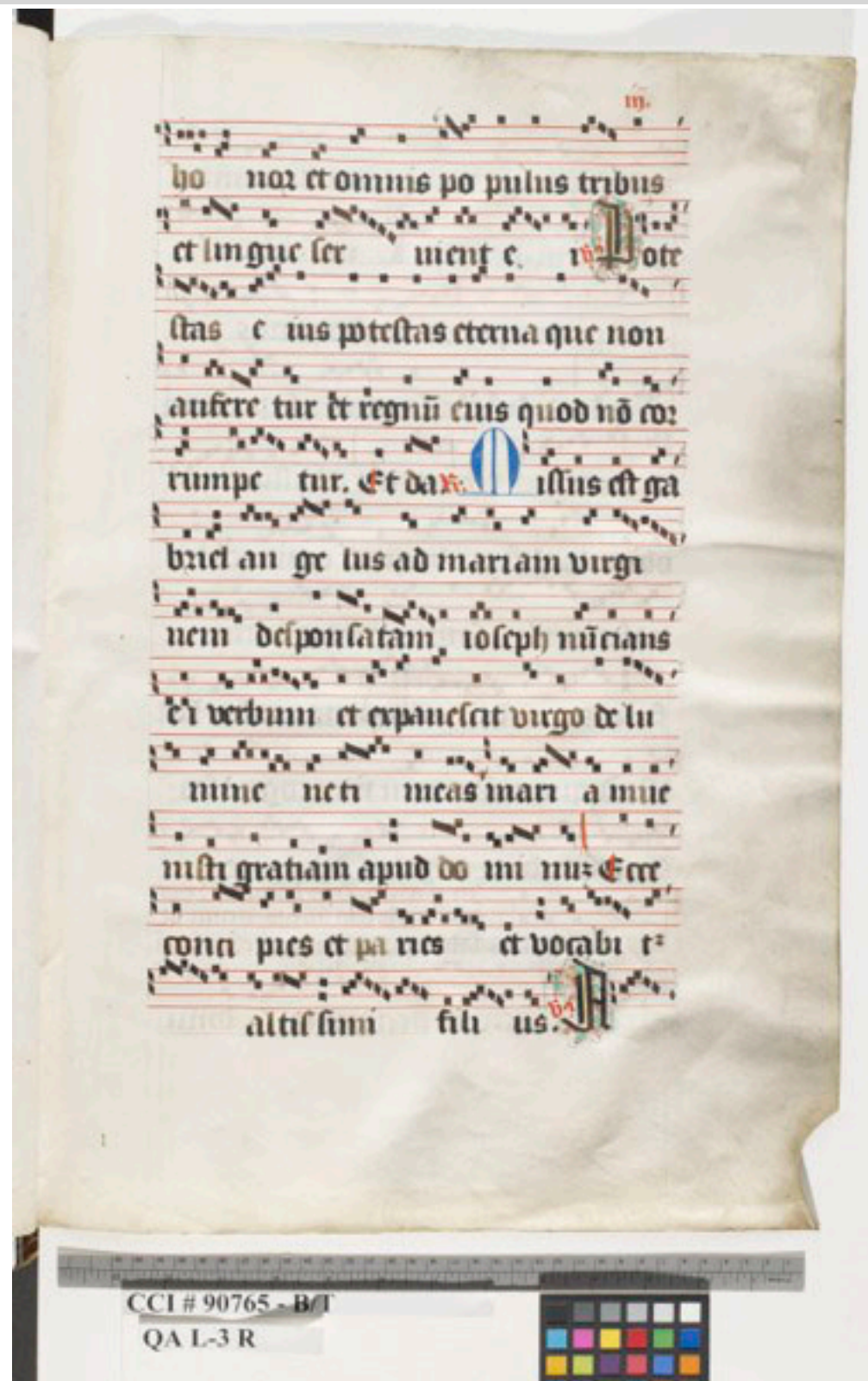
# STAFFLINE REMOVAL

ho nor et omnis po pulus tribus  
et lingue ser uient e. **P**ote  
tas e ius potestas eterna que non  
aufere tur et regnū eius quod nō cor  
rumpe tur. Et daxe. **I**llus est ga  
briel an ge lus ad mariam virgi  
nem desponsatam ioseph nūcians  
ei verbum et expanescit virgo de lu  
mine nati meas mari a mue  
misti gratiam apud do mi num. Ecce  
conci pies et pa ries et vocabi t  
altis simi fili us. **A**

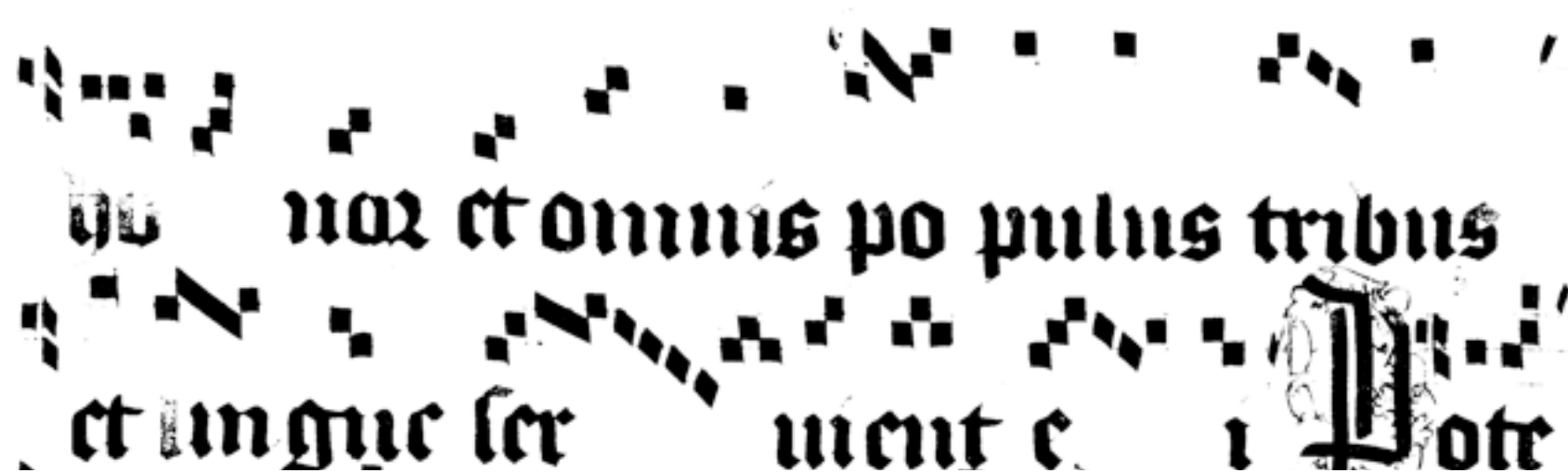
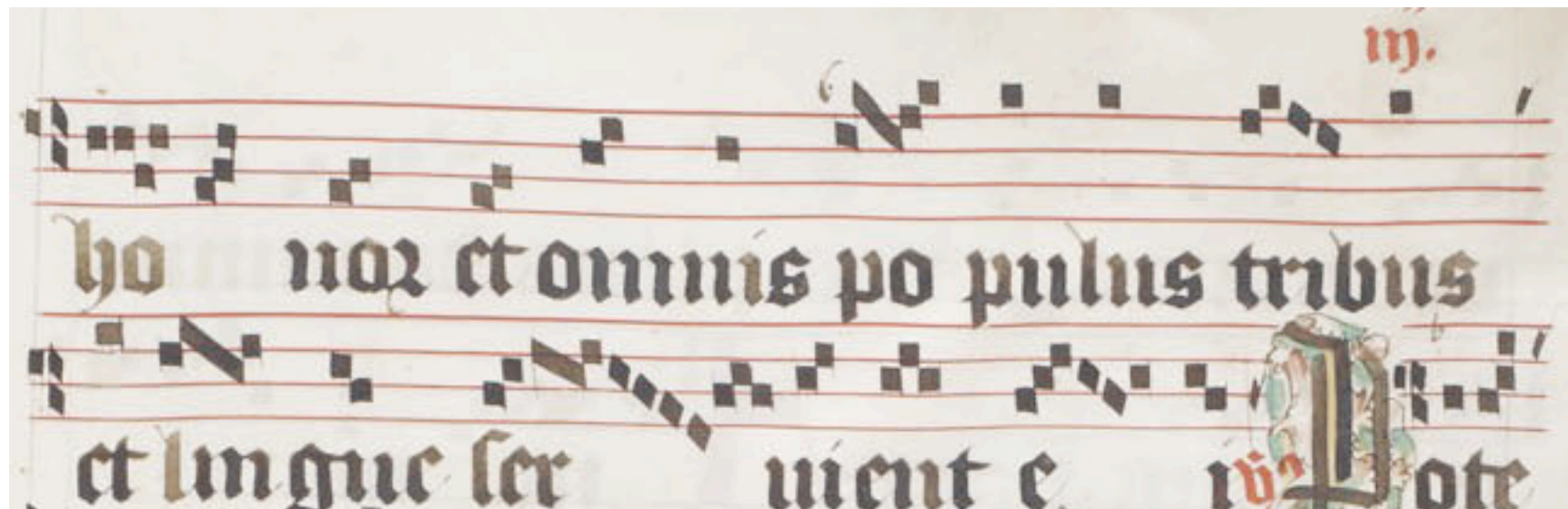
CCI # 90765 - P II  
QA L-3 R

Skeleton

# STAFFLINE REMOVAL



# STAFFLINE REMOVAL



Colour-filtering



# STAFFLINE DETECTION

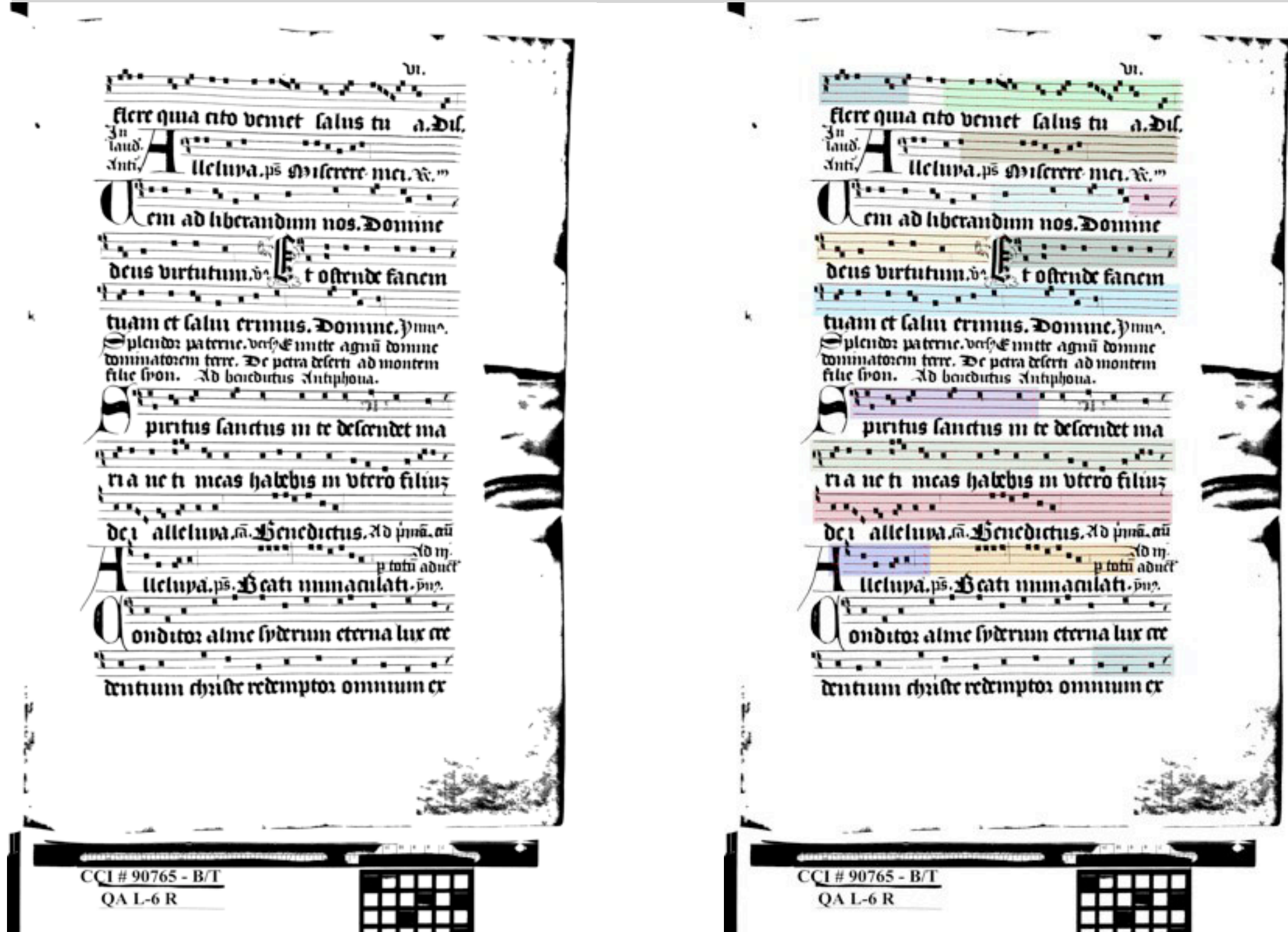
For staff detection of manuscript sources, where all lines are not necessarily parallel, we used the Miyao algorithm. This approach breaks a staff line into equidistant segments.



Miyao algorithm staff detection visual output

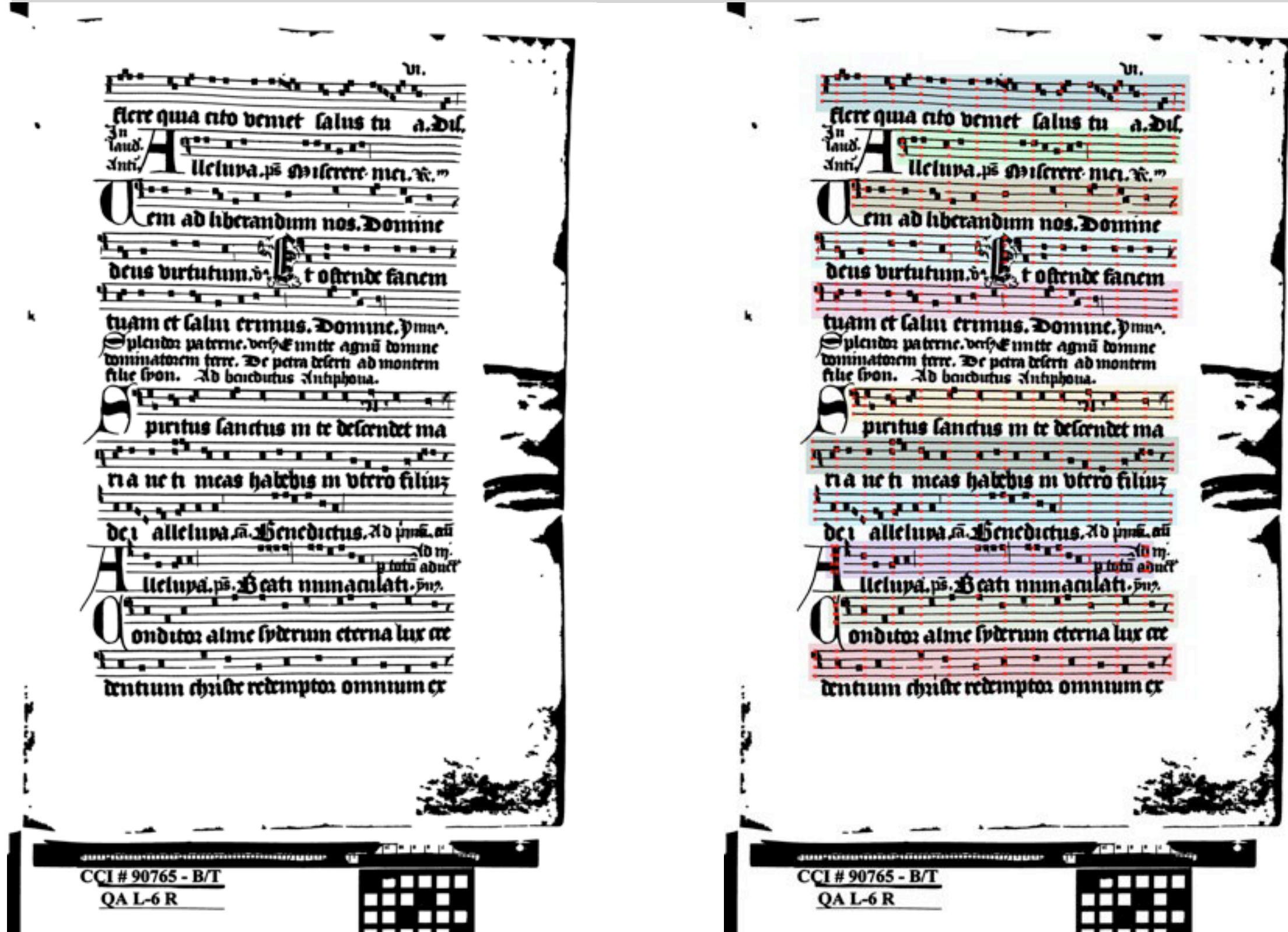


# STAFFLINE DETECTION



Miyao staff detection

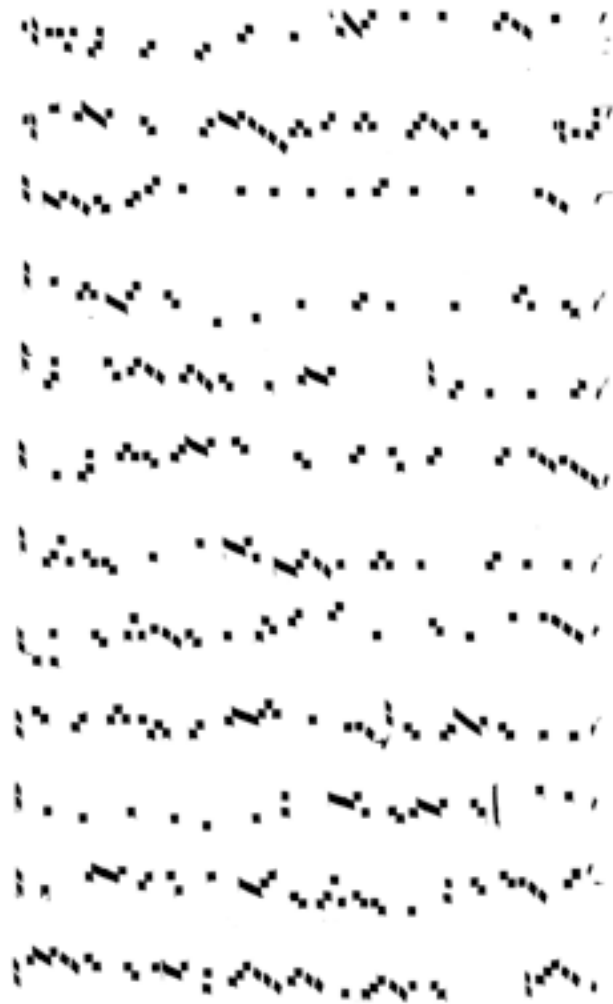
# STAFFLINE DETECTION



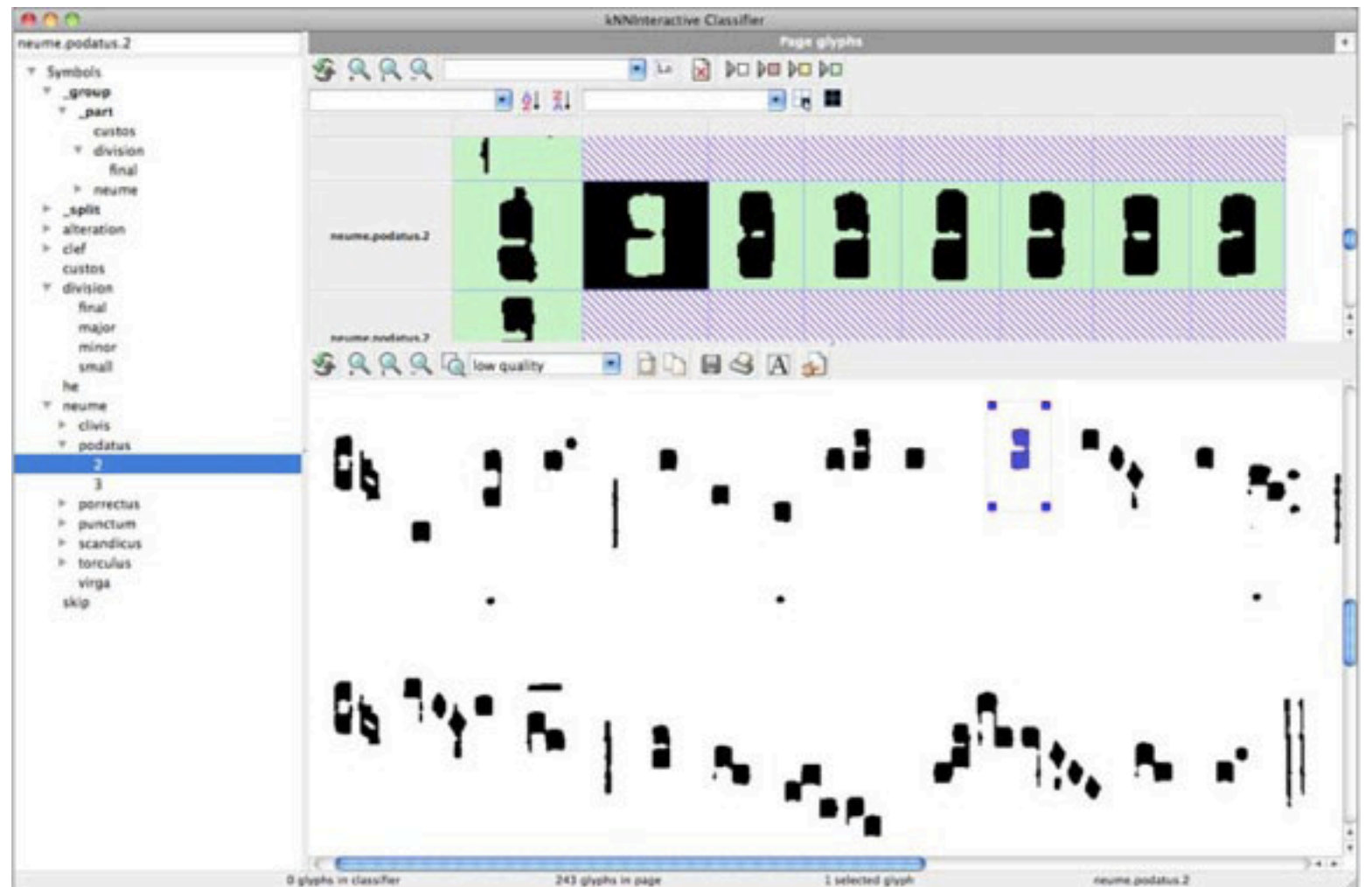
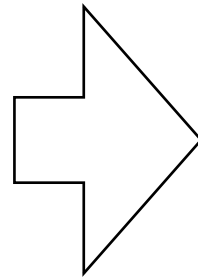
Miyao staff detection with Rank-filtered page



# NEUME CLASSIFICATION AND LABELING

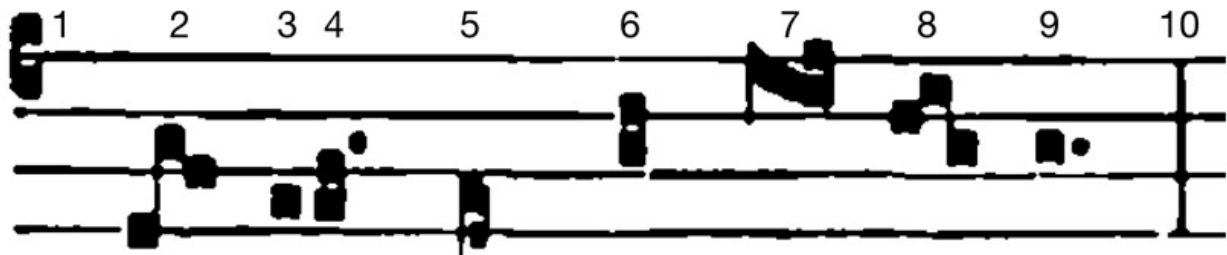


Glyphs-only page



Camera interactive classifier

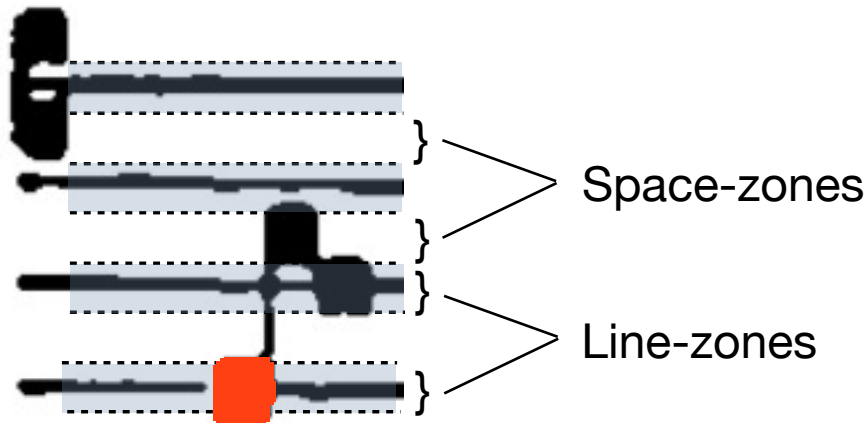
# NEUME CLASSIFICATION, LABELING, AND PITCH RECOGNITION



Encoding scheme

Glyph	Labeling	Glyph	Labeling
1	clef.c	6	neume.podatus.2
2	neume.torculus.4.2	7	neume.porrectus.2.2
3	neume.punctum	8	neume.torculus.2.3
4	neume.podatus.2.dot	9	neume.punctum.dot
5	neume.cephalicus.2	10	division.major

Pitch finding





# MEI ENCODING

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```

THANKS!

DDMAL



Schulich School of Music  
École de musique Schulich



Centre for Interdisciplinary Research  
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McGill



Social Sciences and Humanities  
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